

# **EXHIBIT 10**



US010848885B2

(12) **United States Patent**  
**Lambourne**

(10) **Patent No.:** **US 10,848,885 B2**

(45) **Date of Patent:** **\*Nov. 24, 2020**

(54) **ZONE SCENE MANAGEMENT**

(56) **References Cited**

(71) Applicant: **SONOS, INC.**, Santa Barbara, CA (US)

U.S. PATENT DOCUMENTS

(72) Inventor: **Robert A. Lambourne**, Santa Barbara, CA (US)

3,956,591 A 5/1976 Gates, Jr.  
4,105,974 A 8/1978 Rogers  
(Continued)

(73) Assignee: **Sonos, Inc.**, Santa Barbara, CA (US)

FOREIGN PATENT DOCUMENTS

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

CA 2320451 A1 3/2001  
CN 1598767 A 3/2005  
(Continued)

This patent is subject to a terminal disclaimer.

OTHER PUBLICATIONS

(21) Appl. No.: **16/383,561**

Yamaha DME Designer 3.5 user manual (Year: 2004).\*

(22) Filed: **Apr. 12, 2019**

(Continued)

(65) **Prior Publication Data**

US 2019/0239008 A1 Aug. 1, 2019

*Primary Examiner* — Paul C McCord

**Related U.S. Application Data**

(63) Continuation of application No. 15/130,919, filed on Apr. 15, 2016, which is a continuation of application (Continued)

(51) **Int. Cl.**

**G06F 17/00** (2019.01)

**H04R 27/00** (2006.01)

(Continued)

(52) **U.S. Cl.**

CPC ..... **H04R 27/00** (2013.01); **G05B 15/02** (2013.01); **G06F 3/0482** (2013.01);

(Continued)

(58) **Field of Classification Search**

CPC .... H04R 27/00; H04R 3/12; H04R 2227/005; H04R 2430/01; G05B 15/02;

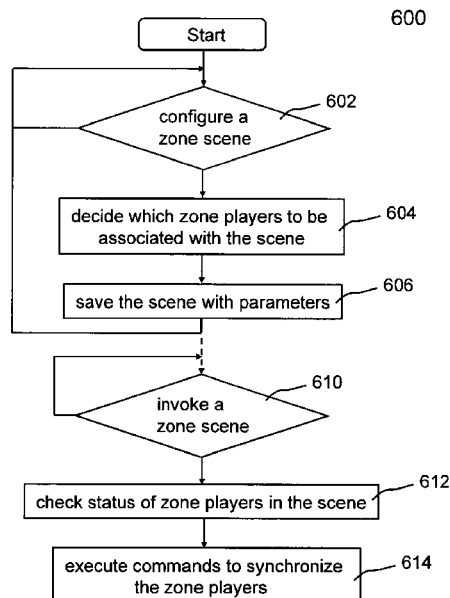
(Continued)

(57)

**ABSTRACT**

An example playback device in a first zone of a media playback system receives a first indication that the first zone has been added to a first zone scene including a first preconfigured grouping of zones including the first zone and a second zone. The playback device receives a second indication that the first zone has been added to a second zone scene including a second preconfigured grouping of zones including the first zone and a third zone. After a given one of the first and second zone scenes has been selected for invocation, the playback device receives an instruction to operate in accordance with the given zone scene, and based on the instruction, begins operating in accordance with the given zone scene such that the playback device is configured to play back audio in synchrony with one or more other playback devices in the media playback system.

**20 Claims, 11 Drawing Sheets**



## US 10,848,885 B2

Page 2

## Related U.S. Application Data

- No. 14/465,457, filed on Aug. 21, 2014, now Pat. No. 9,344,206, which is a continuation of application No. 13/896,829, filed on May 17, 2013, now Pat. No. 8,843,228, which is a continuation of application No. 11/853,790, filed on Sep. 11, 2007, now Pat. No. 8,483,853.
- (60) Provisional application No. 60/825,407, filed on Sep. 12, 2006.
- (51) **Int. Cl.**  
**G05B 15/02** (2006.01)  
**H04N 21/436** (2011.01)  
**H04R 3/12** (2006.01)  
**G06F 3/16** (2006.01)  
**H03G 7/00** (2006.01)  
**G06F 3/0482** (2013.01)  
**G06F 3/0484** (2013.01)  
**H03G 1/02** (2006.01)  
**H04H 60/80** (2008.01)
- (52) **U.S. Cl.**  
CPC ..... **G06F 3/04842** (2013.01); **G06F 3/16** (2013.01); **G06F 3/165** (2013.01); **H03G 1/02** (2013.01); **H03G 7/00** (2013.01); **H04H 60/80** (2013.01); **H04N 21/43615** (2013.01); **H04R 3/12** (2013.01); **H04R 2227/005** (2013.01); **H04R 2430/01** (2013.01)
- (58) **Field of Classification Search**  
CPC ..... G06F 3/0482; G06F 3/04842; G06F 3/16; G06F 3/165; H03G 1/02; H03G 7/00; H04H 60/80; H04N 21/43615  
USPC ..... 700/94  
See application file for complete search history.
- (56) **References Cited**  
U.S. PATENT DOCUMENTS
- |           |   |         |                   |           |   |         |                    |
|-----------|---|---------|-------------------|-----------|---|---------|--------------------|
| D260,764  | S | 9/1981  | Castagna et al.   | 5,182,552 | A | 1/1993  | Paynting           |
| 4,296,278 | A | 10/1981 | Cullison et al.   | D333,135  | S | 2/1993  | Wachob et al.      |
| 4,306,114 | A | 12/1981 | Callahan          | 5,185,680 | A | 2/1993  | Kakubo             |
| 4,382,158 | A | 5/1983  | Ohshita et al.    | 5,197,099 | A | 3/1993  | Hirasawa           |
| 4,509,211 | A | 4/1985  | Robbins           | 5,237,327 | A | 8/1993  | Saitoh et al.      |
| D279,779  | S | 7/1985  | Taylor            | 5,239,458 | A | 8/1993  | Suzuki             |
| 4,530,091 | A | 7/1985  | Crockett          | 5,272,757 | A | 12/1993 | Scotfield et al.   |
| 4,661,902 | A | 4/1987  | Hochsprung et al. | 5,299,266 | A | 3/1994  | Lumsden            |
| 4,689,786 | A | 8/1987  | Sidhu et al.      | 5,313,524 | A | 5/1994  | Van Hulle et al.   |
| 4,696,037 | A | 9/1987  | Fierens           | D350,531  | S | 9/1994  | Tsuji              |
| 4,701,629 | A | 10/1987 | Citroen           | D350,962  | S | 9/1994  | Reardon et al.     |
| 4,712,105 | A | 12/1987 | Koehler           | 5,361,381 | A | 11/1994 | Short              |
| D293,671  | S | 1/1988  | Beaumont          | 5,372,441 | A | 12/1994 | Louis              |
| 4,731,814 | A | 3/1988  | Becker et al.     | D354,059  | S | 1/1995  | Hendricks          |
| 4,816,989 | A | 3/1989  | Finn et al.       | D354,751  | S | 1/1995  | Hersh et al.       |
| 4,824,059 | A | 4/1989  | Butler            | D356,093  | S | 3/1995  | McCauley et al.    |
| D301,037  | S | 5/1989  | Matsuda           | D356,312  | S | 3/1995  | Althans            |
| 4,845,751 | A | 7/1989  | Schwab            | D357,024  | S | 4/1995  | Tokiyama et al.    |
| D304,443  | S | 11/1989 | Grinyer et al.    | 5,406,634 | A | 4/1995  | Anderson et al.    |
| D313,023  | S | 12/1990 | Kolenda et al.    | 5,430,485 | A | 7/1995  | Lankford et al.    |
| D313,398  | S | 1/1991  | Gilchrist         | 5,440,644 | A | 8/1995  | Farinelli et al.   |
| D313,600  | S | 1/1991  | Weber             | D362,446  | S | 9/1995  | Gasiorek et al.    |
| 4,994,908 | A | 2/1991  | Kuban et al.      | 5,457,448 | A | 10/1995 | Totsuka et al.     |
| 4,995,778 | A | 2/1991  | Bruessel          | D363,933  | S | 11/1995 | Starck             |
| D320,598  | S | 10/1991 | Auerbach et al.   | 5,467,342 | A | 11/1995 | Logston et al.     |
| D322,609  | S | 12/1991 | Patton            | D364,877  | S | 12/1995 | Tokiyama et al.    |
| 5,086,385 | A | 2/1992  | Launey et al.     | D364,878  | S | 12/1995 | Green et al.       |
| D326,450  | S | 5/1992  | Watanabe          | D365,102  | S | 12/1995 | Gioscia            |
| D327,060  | S | 6/1992  | Wachob et al.     | D366,044  | S | 1/1996  | Hara et al.        |
| 5,151,922 | A | 9/1992  | Weiss             | 5,481,251 | A | 1/1996  | Buys et al.        |
| 5,153,579 | A | 10/1992 | Fisch et al.      | 5,491,839 | A | 2/1996  | Schotz             |
| D331,388  | S | 12/1992 | Dahnert et al.    | 5,515,345 | A | 5/1996  | Barreira et al.    |
|           |   |         |                   | 5,519,641 | A | 5/1996  | Beers et al.       |
|           |   |         |                   | 5,533,021 | A | 7/1996  | Branstad et al.    |
|           |   |         |                   | D372,716  | S | 8/1996  | Thorne             |
|           |   |         |                   | 5,553,147 | A | 9/1996  | Pineau             |
|           |   |         |                   | 5,553,222 | A | 9/1996  | Milne et al.       |
|           |   |         |                   | 5,553,314 | A | 9/1996  | Grube et al.       |
|           |   |         |                   | D377,651  | S | 1/1997  | Biasotti et al.    |
|           |   |         |                   | 5,596,696 | A | 1/1997  | Tindell et al.     |
|           |   |         |                   | 5,602,992 | A | 2/1997  | Danneels           |
|           |   |         |                   | 5,623,483 | A | 4/1997  | Agrawal et al.     |
|           |   |         |                   | 5,625,350 | A | 4/1997  | Fukatsu et al.     |
|           |   |         |                   | D379,816  | S | 6/1997  | Laituri et al.     |
|           |   |         |                   | 5,640,388 | A | 6/1997  | Woodhead et al.    |
|           |   |         |                   | 5,642,171 | A | 6/1997  | Baumgartner et al. |
|           |   |         |                   | D380,752  | S | 7/1997  | Hanson             |
|           |   |         |                   | 5,652,749 | A | 7/1997  | Davenport et al.   |
|           |   |         |                   | D382,271  | S | 8/1997  | Akwivu             |
|           |   |         |                   | 5,661,665 | A | 8/1997  | Glass et al.       |
|           |   |         |                   | 5,668,884 | A | 9/1997  | Clair, Jr. et al.  |
|           |   |         |                   | 5,673,323 | A | 9/1997  | Schotz et al.      |
|           |   |         |                   | D384,940  | S | 10/1997 | Kono et al.        |
|           |   |         |                   | D387,352  | S | 12/1997 | Kaneko et al.      |
|           |   |         |                   | 5,696,896 | A | 12/1997 | Badovinatz et al.  |
|           |   |         |                   | D388,792  | S | 1/1998  | Nykerk             |
|           |   |         |                   | D389,143  | S | 1/1998  | Wicks              |
|           |   |         |                   | D392,641  | S | 3/1998  | Fenner             |
|           |   |         |                   | 5,726,989 | A | 3/1998  | Dokic              |
|           |   |         |                   | D393,628  | S | 4/1998  | Ledbetter et al.   |
|           |   |         |                   | 5,740,235 | A | 4/1998  | Lester et al.      |
|           |   |         |                   | 5,742,623 | A | 4/1998  | Nuber et al.       |
|           |   |         |                   | D394,659  | S | 5/1998  | Biasotti et al.    |
|           |   |         |                   | 5,751,819 | A | 5/1998  | Dorrough           |
|           |   |         |                   | 5,761,320 | A | 6/1998  | Farinelli et al.   |
|           |   |         |                   | 5,774,016 | A | 6/1998  | Ketterer           |
|           |   |         |                   | D395,889  | S | 7/1998  | Gerba et al.       |
|           |   |         |                   | 5,787,249 | A | 7/1998  | Badovinatz et al.  |
|           |   |         |                   | 5,790,543 | A | 8/1998  | Cloutier           |
|           |   |         |                   | D397,996  | S | 9/1998  | Smith              |
|           |   |         |                   | 5,808,662 | A | 9/1998  | Kinney et al.      |
|           |   |         |                   | 5,812,201 | A | 9/1998  | Yoo                |
|           |   |         |                   | 5,815,689 | A | 9/1998  | Shaw et al.        |
|           |   |         |                   | 5,818,948 | A | 10/1998 | Gulick             |
|           |   |         |                   | D401,587  | S | 11/1998 | Rudolph            |
|           |   |         |                   | 5,832,024 | A | 11/1998 | Schotz et al.      |
|           |   |         |                   | 5,848,152 | A | 12/1998 | Slipy et al.       |
|           |   |         |                   | 5,852,722 | A | 12/1998 | Hamilton           |
|           |   |         |                   | 5,852,744 | A | 12/1998 | Agatone et al.     |

## US 10,848,885 B2

Page 3

(56)

## References Cited

## U.S. PATENT DOCUMENTS

D404,741	S	1/1999	Schumaker et al.	6,313,879	B1	11/2001	Kubo et al.
D405,071	S	2/1999	Gambara	6,321,252	B1	11/2001	Bhola et al.
5,867,691	A	2/1999	Shiraishi	6,324,586	B1	11/2001	Johnson
5,875,233	A	2/1999	Cox	D452,520	S	12/2001	Gotham et al.
5,875,354	A	2/1999	Charlton et al.	6,332,147	B1	12/2001	Moran et al.
D406,847	S	3/1999	Gerba et al.	6,336,219	B1	1/2002	Nathan
D407,071	S	3/1999	Keating	6,343,028	B1	1/2002	Kuwaoka
5,887,143	A	3/1999	Saito et al.	6,349,285	B1	2/2002	Liu et al.
5,905,768	A	5/1999	Maturi et al.	6,349,339	B1	2/2002	Williams
D410,927	S	6/1999	Yamagishi	6,349,352	B1	2/2002	Lea
5,910,990	A	6/1999	Jang	6,351,821	B1	2/2002	Voth
5,910,991	A	6/1999	Farrar	6,353,172	B1	3/2002	Fay et al.
D412,337	S	7/1999	Hamano	6,356,871	B1	3/2002	Hemkumar et al.
5,923,869	A	7/1999	Kashiwagi et al.	6,404,811	B1	6/2002	Cvetko et al.
5,923,902	A	7/1999	Inagaki	6,418,150	B1	7/2002	Staats
5,946,343	A	8/1999	Schotz et al.	6,430,353	B1	8/2002	Honda et al.
5,956,025	A	9/1999	Goulden et al.	6,442,443	B1	8/2002	Fujii et al.
5,956,088	A	9/1999	Shen et al.	D462,339	S	9/2002	Allen et al.
5,960,006	A	9/1999	Maturi et al.	D462,340	S	9/2002	Allen et al.
5,960,167	A	9/1999	Roberts et al.	D462,945	S	9/2002	Skulley
D415,496	S	10/1999	Gerba et al.	6,449,642	B2	9/2002	Bourke-Dunphy et al.
D416,021	S	11/1999	Godette et al.	6,449,653	B2	9/2002	Klemets et al.
5,984,512	A	11/1999	Jones et al.	6,456,783	B1	9/2002	Ando et al.
5,987,611	A	11/1999	Freund	6,463,474	B1	10/2002	Fuh et al.
5,990,884	A	11/1999	Douma et al.	6,466,832	B1	10/2002	Zuqert et al.
5,991,307	A	11/1999	Komuro et al.	6,469,633	B1	10/2002	Wachter et al.
5,999,906	A	12/1999	Mercs et al.	D466,108	S	11/2002	Glodava et al.
6,009,457	A	12/1999	Moller	6,487,296	B1	11/2002	Allen et al.
6,018,376	A	1/2000	Nakatani	6,493,832	B1	12/2002	Itakura et al.
D420,006	S	2/2000	Tonino	D468,297	S	1/2003	Ikeda
6,026,150	A	2/2000	Frank et al.	6,522,886	B1	2/2003	Youngs et al.
6,026,297	A	2/2000	Haartsen	6,526,325	B1	2/2003	Sussman et al.
6,029,196	A	2/2000	Lenz	6,535,121	B2	3/2003	Mathney et al.
6,031,818	A	2/2000	Lo et al.	D474,763	S	5/2003	Tozaki et al.
6,032,202	A	2/2000	Lea et al.	D475,993	S	6/2003	Meyer et al.
6,038,614	A	3/2000	Chan et al.	D476,643	S	7/2003	Yamagishi
6,046,550	A	4/2000	Ference et al.	D477,310	S	7/2003	Moransais
6,061,457	A	5/2000	Stockhamer	6,587,127	B1	7/2003	Leeke et al.
6,078,725	A	6/2000	Tanaka	6,598,172	B1	7/2003	Vandeusen et al.
6,081,266	A	6/2000	Sciammarella	D478,051	S	8/2003	Sagawa
6,085,236	A	7/2000	Lea	D478,069	S	8/2003	Beck et al.
6,088,063	A	7/2000	Shiba	D478,896	S	8/2003	Summers
D429,246	S	8/2000	Holma	6,604,023	B1	8/2003	Brown et al.
D430,143	S	8/2000	Renk	6,611,537	B1	8/2003	Edens et al.
6,101,195	A	8/2000	Lyons et al.	D479,520	S	9/2003	De
6,108,485	A	8/2000	Kim	D481,056	S	10/2003	Kawasaki et al.
6,108,686	A	8/2000	Williams, Jr.	6,631,410	B1	10/2003	Kowalski et al.
6,119,239	A	9/2000	Fujii	6,636,269	B1	10/2003	Baldwin
6,122,668	A	9/2000	Teng et al.	6,653,899	B2	11/2003	Organvidez et al.
6,122,749	A	9/2000	Gulick	6,654,720	B1	11/2003	Graham et al.
D431,552	S	10/2000	Backs et al.	6,654,956	B1	11/2003	Trinh et al.
D432,525	S	10/2000	Beecroft	6,658,091	B1	12/2003	Naidoo et al.
6,127,941	A	10/2000	Van Ryzin	6,674,803	B1	1/2004	Kesselring
6,128,318	A	10/2000	Sato	6,684,060	B1	1/2004	Curtin
6,131,130	A	10/2000	Van Ryzin	D486,145	S	2/2004	Kaminski et al.
6,148,205	A	11/2000	Cotton	6,687,664	B1	2/2004	Sussman et al.
6,157,957	A	12/2000	Berthaud	6,703,940	B1	3/2004	Allen et al.
6,163,647	A	12/2000	Terashima et al.	6,704,421	B1	3/2004	Kitamura
6,169,725	B1	1/2001	Gibbs et al.	6,732,176	B1	5/2004	Stewart et al.
6,175,872	B1	1/2001	Neumann et al.	6,741,708	B1	5/2004	Nakatsugawa
6,181,383	B1	1/2001	Fox et al.	6,741,961	B2	5/2004	Lim
6,185,737	B1	2/2001	Northcutt et al.	D491,925	S	6/2004	Griesau et al.
6,195,435	B1	2/2001	Kitamura	6,757,517	B2	6/2004	Chang et al.
6,195,436	B1	2/2001	Scibora et al.	D493,148	S	7/2004	Shibata et al.
6,199,169	B1	3/2001	Voth	6,763,274	B1	7/2004	Gilbert
6,212,282	B1	4/2001	Mershon	D495,333	S	8/2004	Borsboom
6,246,701	B1	6/2001	Slattery	6,772,267	B2	8/2004	Thaler et al.
6,253,293	B1	6/2001	Rao et al.	6,778,073	B2	8/2004	Lutter et al.
D444,475	S	7/2001	Levey et al.	6,778,493	B1	8/2004	Ishii
6,255,961	B1	7/2001	Van et al.	6,778,869	B2	8/2004	Champion
6,256,554	B1	7/2001	DiLorenzo	D496,003	S	9/2004	Spira
6,269,406	B1	7/2001	Dutcher et al.	D496,005	S	9/2004	Wang
6,301,012	B1	10/2001	White et al.	D496,335	S	9/2004	Spira
6,308,207	B1	10/2001	Tseng et al.	6,788,938	B1	9/2004	Sugaya et al.
6,310,652	B1	10/2001	Li et al.	D497,363	S	10/2004	Olson et al.
				6,803,964	B1	10/2004	Post et al.
				6,809,635	B1	10/2004	Kaaresoja
				D499,086	S	11/2004	Polito
				6,816,510	B1	11/2004	Banerjee

## US 10,848,885 B2

Page 4

(56)

## References Cited

## U.S. PATENT DOCUMENTS

6,816,818 B2	11/2004	Wolf et al.	7,161,939 B2	1/2007	Israel et al.
6,823,225 B1	11/2004	Sass	7,162,315 B2	1/2007	Gilbert
6,826,283 B1	11/2004	Wheeler et al.	7,171,010 B2	1/2007	Martin et al.
D499,395 S	12/2004	Hsu	7,174,157 B2	2/2007	Gassho et al.
D499,718 S	12/2004	Chen	7,184,774 B2	2/2007	Robinson et al.
D500,015 S	12/2004	Gubbe	7,185,090 B2	2/2007	Kowalski et al.
6,836,788 B2	12/2004	Kim et al.	7,187,947 B1	3/2007	White et al.
6,839,752 B1	1/2005	Miller et al.	7,197,148 B2	3/2007	Nourse et al.
D501,477 S	2/2005	Hall	7,206,367 B1	4/2007	Moore et al.
6,859,460 B1	2/2005	Chen	7,206,618 B2	4/2007	Latto et al.
6,859,538 B1	2/2005	Voltz	7,206,967 B1	4/2007	Marti et al.
6,870,934 B2	3/2005	Krochmal et al.	7,209,795 B2	4/2007	Sullivan et al.
6,873,862 B2	3/2005	Reshefsky	7,215,649 B2	5/2007	Yu et al.
6,882,335 B2	4/2005	Saarinén	7,218,708 B2	5/2007	Berezowski et al.
D504,872 S	5/2005	Uehara et al.	7,236,739 B2	6/2007	Chang et al.
D504,885 S	5/2005	Zhang et al.	7,236,773 B2	6/2007	Thomas
6,889,207 B2	5/2005	Slemmer et al.	7,246,374 B1	7/2007	Simon et al.
6,898,642 B2	5/2005	Chaffle et al.	7,257,398 B1	8/2007	Ukita et al.
6,901,439 B1	5/2005	Bonasia et al.	7,260,616 B1	8/2007	Cook
D506,463 S	6/2005	Daniels	7,263,110 B2	8/2007	Fujishiro
6,907,458 B2	6/2005	Tomassetti et al.	7,269,338 B2	9/2007	Janevski
6,912,610 B2	6/2005	Spencer	7,274,761 B2	9/2007	Muller et al.
6,915,347 B2	7/2005	Hanko et al.	7,275,156 B2	9/2007	Balfanz et al.
6,916,980 B2	7/2005	Ishida et al.	7,277,547 B1	10/2007	Delker et al.
6,917,592 B1	7/2005	Ramankutty et al.	7,286,652 B1	10/2007	Azriel et al.
6,919,771 B2	7/2005	Nakajima	7,289,631 B2	10/2007	Ishidoshiro
6,920,373 B2	7/2005	Xi et al.	7,293,060 B2	11/2007	Komsi
6,931,134 B1	8/2005	Waller, Jr. et al.	7,295,548 B2	11/2007	Blank et al.
6,931,557 B2	8/2005	Togawa	7,302,468 B2	11/2007	Wijeratne
6,934,766 B1	8/2005	Russell	7,305,694 B2	12/2007	Commons et al.
6,937,988 B1	8/2005	Hemkumar et al.	7,308,188 B2	12/2007	Namatame
6,950,666 B2	9/2005	Asakawa	7,308,489 B2	12/2007	Weast
6,965,948 B1	11/2005	Eneborg et al.	7,310,334 B1	12/2007	Fitzgerald et al.
6,970,481 B2	11/2005	Gray, III et al.	7,312,785 B2	12/2007	Tsuk et al.
6,970,482 B2	11/2005	Kim	7,313,384 B1	12/2007	Meenan et al.
6,981,259 B2	12/2005	Luman et al.	7,313,593 B1	12/2007	Pulito et al.
6,985,694 B1	1/2006	De Bonet et al.	7,319,764 B1	1/2008	Reid et al.
6,987,767 B2	1/2006	Saito	7,324,857 B2	1/2008	Goddard
6,987,947 B2	1/2006	Richenstein et al.	7,330,875 B1	2/2008	Parasnis et al.
6,993,570 B1	1/2006	Irani	7,333,519 B2	2/2008	Sullivan et al.
D515,072 S	2/2006	Lee	7,346,332 B2	3/2008	McCarty et al.
D515,557 S	2/2006	Okuley	7,356,011 B1	4/2008	Waters et al.
7,007,106 B1	2/2006	Flood et al.	7,359,006 B1	4/2008	Xiang et al.
7,020,791 B1	3/2006	Aweya et al.	7,363,363 B2	4/2008	Dal Canto et al.
D518,475 S	4/2006	Yang et al.	7,366,206 B2	4/2008	Lockridge et al.
7,043,477 B2	5/2006	Mercer et al.	7,372,846 B2	5/2008	Zwack
7,043,651 B2	5/2006	Aweya et al.	7,376,834 B2	5/2008	Edwards et al.
7,046,677 B2	5/2006	Monta et al.	7,391,791 B2	6/2008	Balassanian et al.
7,047,308 B2	5/2006	Deshpande	7,392,102 B2	6/2008	Sullivan et al.
7,054,888 B2	5/2006	LaChapelle et al.	7,392,387 B2	6/2008	Balfanz et al.
7,058,889 B2	6/2006	Trovato et al.	7,392,481 B2	6/2008	Gewickey et al.
7,068,596 B1	6/2006	Mou	7,400,644 B2	7/2008	Sakamoto et al.
D524,296 S	7/2006	Kita	7,400,732 B2	7/2008	Staddon et al.
7,072,477 B1	7/2006	Kincaid	7,412,499 B2	8/2008	Chang et al.
7,076,204 B2	7/2006	Richenstein et al.	7,424,267 B2	9/2008	Eisenbach
D527,375 S	8/2006	Flora et al.	7,428,310 B2	9/2008	Park
7,092,528 B2	8/2006	Patrick et al.	7,430,181 B1	9/2008	Hong
7,092,694 B2	8/2006	Griep et al.	7,454,619 B2	11/2008	Smetters et al.
7,096,169 B2	8/2006	Crutchfield et al.	7,457,948 B1	11/2008	Bilicksa et al.
7,107,442 B2	9/2006	Cheshire	7,472,058 B2	12/2008	Tseng et al.
7,113,999 B2	9/2006	Pestoni et al.	7,474,677 B2	1/2009	Trott
7,115,017 B1	10/2006	Laursen et al.	7,483,538 B2	1/2009	McCarty et al.
7,120,168 B2	10/2006	Zimmermann	7,483,540 B2	1/2009	Rabinowitz et al.
7,123,731 B2	10/2006	Cohen et al.	7,483,958 B1	1/2009	Elabbady et al.
7,130,316 B2	10/2006	Kovacevic	7,490,044 B2	2/2009	Kulkarni
7,130,368 B1	10/2006	Aweya et al.	7,492,912 B2	2/2009	Chung et al.
7,130,608 B2	10/2006	Hollstrom et al.	7,505,889 B2	3/2009	Salmonsén et al.
7,130,616 B2	10/2006	Janik	7,509,181 B2	3/2009	Champion
7,136,934 B2	11/2006	Carter et al.	7,519,188 B2	4/2009	Berardi et al.
7,139,981 B2	11/2006	Mayer et al.	7,519,667 B1	4/2009	Capps
7,143,141 B1	11/2006	Morgan et al.	7,532,862 B2	5/2009	Cheshire
7,143,939 B2	12/2006	Henzerling	7,539,551 B2	5/2009	Komura et al.
7,146,260 B2	12/2006	Preston et al.	7,548,744 B2	6/2009	Oesterling et al.
7,158,488 B2	1/2007	Fujimori	7,548,851 B1	6/2009	Lau et al.
7,158,783 B2	1/2007	Eguchi	7,558,224 B1	7/2009	Surazski et al.
			7,558,635 B1	7/2009	Thiel et al.
			7,561,697 B2	7/2009	Harris
			7,561,932 B1	7/2009	Holmes et al.
			7,571,014 B1	8/2009	Lambourne et al.

## US 10,848,885 B2

Page 5

(56)

## References Cited

## U.S. PATENT DOCUMENTS

7,574,274 B2	8/2009	Holmes	7,987,294 B2	7/2011	Bryce et al.
7,581,096 B2	8/2009	Balfanz et al.	7,995,732 B2	8/2011	Koch et al.
7,599,685 B2	10/2009	Goldberg et al.	7,996,566 B1	8/2011	Sylvain et al.
7,606,174 B2	10/2009	Ochi et al.	7,996,588 B2	8/2011	Subbiah et al.
7,620,468 B2	11/2009	Shimizu	8,014,423 B2	9/2011	Thaler et al.
7,626,952 B2	12/2009	Slemmer et al.	8,015,306 B2	9/2011	Bowman
7,627,825 B2	12/2009	Kakuda	8,020,023 B2	9/2011	Millington et al.
7,630,500 B1	12/2009	Beckman et al.	8,023,663 B2	9/2011	Goldberg
7,630,501 B2	12/2009	Blank et al.	8,028,038 B2	9/2011	Weel
7,631,119 B2	12/2009	Moore et al.	8,028,323 B2	9/2011	Weel
7,634,093 B2	12/2009	McGrath	8,041,062 B2	10/2011	Cohen et al.
7,643,894 B2	1/2010	Braithwaite et al.	8,045,721 B2	10/2011	Burgan et al.
7,653,344 B1	1/2010	Feldman et al.	8,045,952 B2	10/2011	Qureshey et al.
7,657,224 B2	2/2010	Goldberg et al.	8,050,203 B2	11/2011	Jacobsen et al.
7,657,255 B2	2/2010	Abel et al.	8,050,652 B2	11/2011	Qureshey et al.
7,657,644 B1	2/2010	Zheng	8,054,987 B2	11/2011	Seydoux
7,657,910 B1	2/2010	McAulay et al.	8,055,364 B2	11/2011	Champion
7,665,115 B2	2/2010	Gallo et al.	8,063,698 B2	11/2011	Howard
7,668,990 B2	2/2010	Krzyzanowski et al.	8,074,253 B1	12/2011	Nathan
7,669,113 B1	2/2010	Moore et al.	8,086,287 B2	12/2011	Mooney et al.
7,669,219 B2	2/2010	Scott, III	8,086,752 B2	12/2011	Millington et al.
7,672,470 B2	3/2010	Lee	8,090,317 B2	1/2012	Burge et al.
7,675,943 B2	3/2010	Mosig et al.	8,103,009 B2	1/2012	McCarty et al.
7,676,044 B2	3/2010	Sasaki et al.	8,111,132 B2	2/2012	Allen et al.
7,676,142 B1	3/2010	Hung	8,112,032 B2	2/2012	Ko et al.
7,688,306 B2	3/2010	Wehrenberg et al.	8,116,476 B2	2/2012	Inohara
7,689,304 B2	3/2010	Sasaki	8,126,172 B2	2/2012	Horbach et al.
7,689,305 B2	3/2010	Kreifeldt et al.	8,131,389 B1	3/2012	Hardwick et al.
7,690,017 B2	3/2010	Stecyk et al.	8,131,390 B2	3/2012	Braithwaite et al.
7,702,279 B2	4/2010	Ko et al.	8,134,650 B2	3/2012	Maxson et al.
7,702,403 B1	4/2010	Gladwin et al.	8,135,141 B2	3/2012	Shiba
7,710,941 B2	5/2010	Rietschel et al.	8,139,774 B2	3/2012	Berardi et al.
7,711,774 B1	5/2010	Rothschild	8,144,883 B2	3/2012	Pdersen et al.
7,716,375 B2	5/2010	Blum et al.	8,148,622 B2	4/2012	Rothkopf et al.
7,720,096 B2	5/2010	Klemets	8,150,079 B2	4/2012	Maeda et al.
7,721,032 B2	5/2010	Bushell et al.	8,156,337 B2	4/2012	Balfanz et al.
7,742,740 B2	6/2010	Goldberg et al.	8,160,281 B2	4/2012	Kim et al.
7,742,832 B1	6/2010	Feldman et al.	8,169,938 B2	5/2012	Duchscher et al.
7,743,009 B2	6/2010	Hangartner et al.	8,170,222 B2	5/2012	Dunko
7,746,906 B2	6/2010	Jinzaki et al.	8,170,260 B2	5/2012	Reining et al.
7,752,329 B1	7/2010	Meenan et al.	8,175,292 B2	5/2012	Aylward et al.
7,757,076 B2	7/2010	Stewart et al.	8,175,297 B1	5/2012	Ho et al.
7,761,176 B2	7/2010	Ben-Yaacov et al.	8,185,674 B2	5/2012	Moore et al.
7,765,315 B2	7/2010	Batson et al.	8,189,824 B2	5/2012	Strauss et al.
RE41,608 E	8/2010	Blair et al.	8,194,874 B2	6/2012	Starobin et al.
7,792,311 B1	9/2010	Holmgren et al.	8,204,890 B1	6/2012	Gogan et al.
7,793,206 B2	9/2010	Lim et al.	8,208,653 B2	6/2012	Eo et al.
7,804,972 B2	9/2010	Melanson	8,214,447 B2	7/2012	Deslippe et al.
7,805,210 B2	9/2010	Cucos et al.	8,214,740 B2	7/2012	Johnson
7,817,960 B2	10/2010	Tan et al.	8,214,873 B2	7/2012	Weel
7,827,259 B2	11/2010	Heller et al.	8,218,790 B2	7/2012	Bull et al.
7,831,054 B2	11/2010	Ball et al.	8,229,125 B2	7/2012	Short
7,835,689 B2	11/2010	Goldberg et al.	8,230,099 B2	7/2012	Weel
7,849,181 B2	12/2010	Slemmer et al.	8,233,029 B2	7/2012	Yoshida et al.
7,853,341 B2	12/2010	McCarty et al.	8,233,632 B1	7/2012	Macdonald et al.
7,865,137 B2	1/2011	Goldberg et al.	8,233,635 B2	7/2012	Shiba
7,882,234 B2	2/2011	Watanabe et al.	8,233,648 B2	7/2012	Sorek et al.
7,885,622 B2	2/2011	Krampf et al.	8,234,395 B2	7/2012	Millington et al.
7,899,656 B2	3/2011	Crutchfield, Jr.	8,238,578 B2	8/2012	Aylward
7,904,720 B2	3/2011	Smetters et al.	8,239,559 B2	8/2012	Rajapakse
7,907,736 B2	3/2011	Yuen et al.	8,239,748 B1	8/2012	Moore et al.
7,907,819 B2	3/2011	Ando et al.	8,243,961 B1	8/2012	Morrill
7,916,861 B2	3/2011	Conley et al.	8,250,218 B2	8/2012	Watanabe et al.
7,916,877 B2	3/2011	Goldberg et al.	8,265,310 B2	9/2012	Berardi et al.
7,917,082 B2	3/2011	Goldberg et al.	8,270,631 B2	9/2012	Kusunoki
7,933,418 B2	4/2011	Morishima	8,279,709 B2	10/2012	Choisel et al.
7,934,239 B1	4/2011	Dagman	8,281,001 B2	10/2012	Busam et al.
7,937,089 B2	5/2011	Smetters et al.	8,285,404 B1	10/2012	Kekki
7,937,752 B2	5/2011	Balfanz et al.	8,290,185 B2	10/2012	Kim
7,945,636 B2	5/2011	Nelson et al.	8,290,603 B1	10/2012	Lambourne et al.
7,945,708 B2	5/2011	Ohkita	8,300,845 B2	10/2012	Zurek et al.
7,958,441 B2	6/2011	Heller et al.	8,306,235 B2	11/2012	Mahowald
7,962,482 B2	6/2011	Handman et al.	8,311,226 B2	11/2012	Lorgeoux et al.
7,966,388 B1	6/2011	Pugaczewski et al.	8,315,555 B2	11/2012	Ko et al.
7,975,051 B2	7/2011	Saint Clair et al.	8,316,147 B2	11/2012	Batson et al.
			8,325,931 B2	12/2012	Howard et al.
			8,325,935 B2	12/2012	Rutschman
			8,331,585 B2	12/2012	Hagen et al.
			8,340,330 B2	12/2012	Yoon et al.



## US 10,848,885 B2

Page 6

(56)

## References Cited

## U.S. PATENT DOCUMENTS

8,345,709 B2	1/2013	Nitzpon et al.	8,984,442 B2	3/2015	Pirnack et al.
8,364,295 B2	1/2013	Beckmann et al.	9,014,833 B2	4/2015	Goh et al.
8,370,678 B2	2/2013	Millington et al.	9,020,153 B2	4/2015	Britt, Jr.
8,374,595 B2	2/2013	Chien et al.	9,042,556 B2	5/2015	Kallai et al.
8,391,501 B2	3/2013	Khawand et al.	9,078,281 B2	7/2015	Matsuda et al.
8,407,623 B2	3/2013	Kerr et al.	9,112,622 B2	8/2015	Miyata et al.
8,411,883 B2	4/2013	Matsumoto	9,137,602 B2	9/2015	Mayman et al.
8,423,659 B2	4/2013	Millington	9,160,965 B2	10/2015	Redmann et al.
8,423,893 B2	4/2013	Ramsay et al.	9,195,258 B2	11/2015	Millington
8,432,851 B2	4/2013	Xu et al.	9,219,959 B2	12/2015	Kallai et al.
8,433,076 B2	4/2013	Zurek et al.	9,226,073 B2	12/2015	Ramos et al.
8,442,239 B2	5/2013	Bruelle-Drews et al.	9,245,514 B2	1/2016	Donaldson
8,452,020 B2	5/2013	Gregg et al.	9,325,286 B1	4/2016	Yang
8,457,334 B2	6/2013	Yoon et al.	9,344,206 B2 *	5/2016	Lambourne ..... G06F 3/16
8,463,184 B2	6/2013	Dua	9,524,098 B2	12/2016	Griffiths et al.
8,463,875 B2	6/2013	Katz et al.	9,560,448 B2	1/2017	Hartung
8,473,844 B2	6/2013	Kreifeldt et al.	9,998,321 B2	6/2018	Cheshire
8,477,958 B2	7/2013	Moeller et al.	2001/0001160 A1	5/2001	Shoff et al.
8,483,853 B1 *	7/2013	Lambourne ..... G06F 3/165 700/94	2001/0009604 A1	7/2001	Ando et al.
8,498,726 B2	7/2013	Kim et al.	2001/0020193 A1	9/2001	Teramachi et al.
8,509,211 B2	8/2013	Trotter et al.	2001/0022823 A1	9/2001	Renaud
8,509,463 B2	8/2013	Goh et al.	2001/0027498 A1	10/2001	Van De Meulenhof et al.
8,515,389 B2	8/2013	Smetters et al.	2001/0032188 A1	10/2001	Miyabe et al.
8,520,870 B2	8/2013	Sato et al.	2001/0042107 A1	11/2001	Palm
8,565,455 B2	10/2013	Worrell et al.	2001/0043456 A1	11/2001	Atkinson
8,577,045 B2	11/2013	Gibbs	2001/0046235 A1	11/2001	Trevitt et al.
8,577,048 B2	11/2013	Chaikin et al.	2001/0047377 A1	11/2001	Sincaglia et al.
8,588,432 B1	11/2013	Simon	2001/0050991 A1	12/2001	Eves
8,588,949 B2	11/2013	Lambourne et al.	2001/0055950 A1	12/2001	Davies et al.
8,600,075 B2	12/2013	Lim	2002/0002039 A1	1/2002	Qureshey et al.
8,600,084 B1	12/2013	Garrett	2002/0002562 A1	1/2002	Moran et al.
8,601,394 B2	12/2013	Sheehan et al.	2002/0002565 A1	1/2002	Ohyama
8,611,559 B2	12/2013	Sanders	2002/0003548 A1	1/2002	Krusche et al.
8,615,091 B2	12/2013	Terwal	2002/0015003 A1	2/2002	Kato et al.
8,620,006 B2	12/2013	Berardi et al.	2002/0022453 A1	2/2002	Balog et al.
8,639,830 B2	1/2014	Bowman	2002/0026442 A1	2/2002	Lipscomb et al.
8,654,995 B2	2/2014	Silber et al.	2002/0034374 A1	3/2002	Barton
8,672,744 B1	3/2014	Gronkowski et al.	2002/0042844 A1	4/2002	Chiazzese
8,683,009 B2	3/2014	Ng et al.	2002/0049843 A1	4/2002	Barone et al.
8,688,431 B2	4/2014	Lyons et al.	2002/0062406 A1	5/2002	Chang et al.
8,700,730 B2	4/2014	Rowe	2002/0065926 A1	5/2002	Hackney et al.
8,731,206 B1	5/2014	Park	2002/0067909 A1	6/2002	Iivonen
8,750,282 B2	6/2014	Gelter et al.	2002/0072816 A1	6/2002	Shdema et al.
8,751,026 B2	6/2014	Sato et al.	2002/0072817 A1	6/2002	Champion
8,762,565 B2	6/2014	Togashi et al.	2002/0073228 A1	6/2002	Cognet et al.
8,768,252 B2	7/2014	Watson et al.	2002/0078161 A1	6/2002	Cheng
8,775,546 B2	7/2014	Millington	2002/0078293 A1	6/2002	Kou et al.
8,788,080 B1	7/2014	Kallai et al.	2002/0080783 A1	6/2002	Fujimori et al.
8,797,926 B2	8/2014	Kearney, III et al.	2002/0083172 A1	6/2002	Knowles et al.
8,818,538 B2	8/2014	Sakata	2002/0083342 A1	6/2002	Webb et al.
8,819,554 B2	8/2014	Basso et al.	2002/0090914 A1	7/2002	Kang et al.
8,843,224 B2	9/2014	Holmgren et al.	2002/0093478 A1	7/2002	Yeh
8,843,228 B2 *	9/2014	Lambourne ..... G05B 15/02 700/94	2002/0095460 A1	7/2002	Benson
8,843,586 B2	9/2014	Pantos et al.	2002/0098878 A1	7/2002	Mooney et al.
8,855,319 B2	10/2014	Liu et al.	2002/0101357 A1	8/2002	Gharapetian
8,861,739 B2	10/2014	Ojanpera	2002/0103635 A1	8/2002	Mesarovic et al.
8,879,761 B2	11/2014	Johnson et al.	2002/0109710 A1	8/2002	Holtz et al.
8,885,851 B2	11/2014	Westenbroek	2002/0112084 A1	8/2002	Deen et al.
8,886,347 B2	11/2014	Lambourne	2002/0112244 A1	8/2002	Liou et al.
8,904,066 B2	12/2014	Moore et al.	2002/0114354 A1	8/2002	Sinha et al.
8,914,559 B2	12/2014	Kalayjian et al.	2002/0114359 A1	8/2002	Ibaraki et al.
8,917,877 B2	12/2014	Haafi et al.	2002/0124097 A1	9/2002	Isely et al.
8,923,997 B2	12/2014	Kallai et al.	2002/0129128 A1	9/2002	Gold et al.
8,930,006 B2	1/2015	Haatainen	2002/0129156 A1	9/2002	Yoshikawa
8,934,647 B2	1/2015	Joyce et al.	2002/0131398 A1	9/2002	Taylor
8,934,655 B2	1/2015	Breen et al.	2002/0131761 A1	9/2002	Kawasaki et al.
8,942,252 B2	1/2015	Balassanian et al.	2002/0136335 A1	9/2002	Liou et al.
8,942,395 B2	1/2015	Lissaman et al.	2002/0137505 A1	9/2002	Eiche et al.
8,954,177 B2	2/2015	Sanders	2002/0143547 A1	10/2002	Fay et al.
8,965,544 B2	2/2015	Ramsay	2002/0143998 A1	10/2002	Rajagopal et al.
8,965,546 B2	2/2015	Visser et al.	2002/0146981 A1	10/2002	Saint-Hilaire et al.
8,966,394 B2	2/2015	Gates et al.	2002/0150053 A1	10/2002	Gray et al.
8,977,974 B2	3/2015	Kraut	2002/0159596 A1	10/2002	Durand et al.
			2002/0163361 A1	11/2002	Parkin
			2002/0165721 A1	11/2002	Chang et al.
			2002/0165921 A1	11/2002	Sapieyevski
			2002/0168938 A1	11/2002	Chang
			2002/0173273 A1	11/2002	Spurgat et al.
			2002/0174243 A1	11/2002	Spurgat et al.

## US 10,848,885 B2

Page 7

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2002/0177411	A1	11/2002	Yajima et al.	2004/0019807	A1	1/2004	Freund et al.
2002/0181355	A1	12/2002	Shikunami et al.	2004/0019911	A1	1/2004	Gates et al.
2002/0184310	A1	12/2002	Traversat et al.	2004/0023697	A1	2/2004	Komura
2002/0188762	A1	12/2002	Tomassetti et al.	2004/0024478	A1	2/2004	Hans et al.
2002/0194309	A1	12/2002	Carter et al.	2004/0024925	A1	2/2004	Cypher et al.
2002/0196951	A1	12/2002	Tsai	2004/0027166	A1	2/2004	Mangum et al.
2003/0002609	A1	1/2003	Faller et al.	2004/0032348	A1	2/2004	Lai et al.
2003/0002689	A1	1/2003	Folio	2004/0032421	A1	2/2004	Williamson et al.
2003/0002849	A1	1/2003	Lord	2004/0037433	A1	2/2004	Chen
2003/0008616	A1	1/2003	Anderson	2004/0041836	A1	3/2004	Zaner et al.
2003/0014486	A1	1/2003	May	2004/0042629	A1	3/2004	Mellone et al.
2003/0018797	A1	1/2003	Dunning et al.	2004/0044742	A1	3/2004	Evron et al.
2003/0020763	A1	1/2003	Mayer et al.	2004/0048569	A1	3/2004	Kawamura
2003/0023411	A1	1/2003	Witmer et al.	2004/0059842	A1	3/2004	Hanson et al.
2003/0023741	A1	1/2003	Tomassetti et al.	2004/0059965	A1	3/2004	Marshall et al.
2003/0031333	A1	2/2003	Cohen et al.	2004/0066736	A1	4/2004	Kroeger
2003/0035072	A1	2/2003	Hagg	2004/0071299	A1	4/2004	Yoshino
2003/0035444	A1	2/2003	Zwack	2004/0075767	A1	4/2004	Neuman et al.
2003/0041173	A1	2/2003	Hoyle	2004/0078383	A1	4/2004	Mercer et al.
2003/0041174	A1	2/2003	Wen et al.	2004/0080671	A1	4/2004	Siemens et al.
2003/0043856	A1	3/2003	Lakaniemi et al.	2004/0093096	A1	5/2004	Huang et al.
2003/0043924	A1	3/2003	Haddad et al.	2004/0098754	A1	5/2004	Vella et al.
2003/0046703	A1	3/2003	Knowles et al.	2004/0111473	A1	6/2004	Lysenko et al.
2003/0050058	A1	3/2003	Walsh et al.	2004/0114771	A1	6/2004	Vaughan et al.
2003/0055892	A1	3/2003	Huitema et al.	2004/0117044	A1	6/2004	Konetski
2003/0056220	A1	3/2003	Thornton	2004/0117462	A1	6/2004	Bodin et al.
2003/0061428	A1	3/2003	Garney et al.	2004/0128701	A1	7/2004	Kaneko et al.
2003/0063755	A1	4/2003	Nourse et al.	2004/0131192	A1	7/2004	Metcalf
2003/0066094	A1	4/2003	Van Der Schaar et al.	2004/0133689	A1	7/2004	Vasisht et al.
2003/0067437	A1	4/2003	McClintock et al.	2004/0143368	A1	7/2004	May et al.
2003/0073432	A1	4/2003	Meade	2004/0143852	A1	7/2004	Meyers
2003/0091322	A1	5/2003	Van	2004/0147224	A1	7/2004	Lee
2003/0097478	A1	5/2003	King	2004/0148237	A1	7/2004	Bittmann et al.
2003/0099212	A1	5/2003	Anjum et al.	2004/0168081	A1	8/2004	Ladas et al.
2003/0099221	A1	5/2003	Rhee	2004/0170383	A1	9/2004	Mazur
2003/0100335	A1	5/2003	Gassho et al.	2004/0171346	A1	9/2004	Lin
2003/0101253	A1	5/2003	Saito et al.	2004/0176025	A1	9/2004	Holm et al.
2003/0103088	A1	6/2003	Dresti et al.	2004/0177167	A1	9/2004	Iwamura et al.
2003/0103464	A1	6/2003	Wong et al.	2004/0179554	A1	9/2004	Tsao
2003/0110329	A1	6/2003	Higaki et al.	2004/0183827	A1	9/2004	Putterman et al.
2003/0126211	A1	7/2003	Anttila et al.	2004/0185773	A1	9/2004	Gerber et al.
2003/0135822	A1	7/2003	Evans	2004/0195313	A1	10/2004	Lee
2003/0157951	A1	8/2003	Hasty	2004/0203354	A1	10/2004	Yue
2003/0161479	A1	8/2003	Yang et al.	2004/0203376	A1	10/2004	Phillipps
2003/0167335	A1	9/2003	Alexander	2004/0203378	A1	10/2004	Powers
2003/0172123	A1	9/2003	Polan et al.	2004/0203590	A1	10/2004	Shteyn
2003/0177889	A1	9/2003	Koseki et al.	2004/0203936	A1	10/2004	Ogino et al.
2003/0179780	A1	9/2003	Walker et al.	2004/0208158	A1	10/2004	Fellman et al.
2003/0185400	A1	10/2003	Yoshizawa et al.	2004/0213230	A1	10/2004	Douskalis et al.
2003/0195964	A1	10/2003	Mane	2004/0214524	A1	10/2004	Noda et al.
2003/0198254	A1	10/2003	Sullivan et al.	2004/0220687	A1	11/2004	Klotz et al.
2003/0198255	A1	10/2003	Sullivan et al.	2004/0223622	A1	11/2004	Lindemann et al.
2003/0198257	A1	10/2003	Sullivan et al.	2004/0224638	A1	11/2004	Fadell et al.
2003/0200001	A1	10/2003	Goddard et al.	2004/0225389	A1	11/2004	Ledoux et al.
2003/0204273	A1	10/2003	Dinker et al.	2004/0228367	A1	11/2004	Mosig et al.
2003/0204509	A1	10/2003	Dinker et al.	2004/0248601	A1	12/2004	Chang
2003/0210796	A1	11/2003	McCarty et al.	2004/0249490	A1	12/2004	Sakai
2003/0212802	A1	11/2003	Rector et al.	2004/0249965	A1	12/2004	Huggins et al.
2003/0219007	A1	11/2003	Barrack et al.	2004/0249982	A1	12/2004	Arnold et al.
2003/0220705	A1	11/2003	Ibey	2004/0252400	A1	12/2004	Blank et al.
2003/0225834	A1	12/2003	Lee et al.	2004/0253969	A1	12/2004	Nguyen et al.
2003/0227478	A1	12/2003	Chatfield	2004/0264717	A1	12/2004	Fujita et al.
2003/0229900	A1	12/2003	Reisman	2005/0002535	A1	1/2005	Liu et al.
2003/0231208	A1	12/2003	Hanon et al.	2005/0010691	A1	1/2005	Oyadomari et al.
2003/0231871	A1	12/2003	Ushimaru	2005/0011388	A1	1/2005	Kouznetsov
2003/0235304	A1	12/2003	Evans et al.	2005/0013394	A1	1/2005	Rausch et al.
2004/0001106	A1	1/2004	Deutscher et al.	2005/0015551	A1	1/2005	Eames et al.
2004/0001484	A1	1/2004	Ozguner	2005/0021470	A1	1/2005	Martin et al.
2004/0001591	A1	1/2004	Mani et al.	2005/0021590	A1	1/2005	Debique et al.
2004/0008852	A1	1/2004	Also et al.	2005/0027821	A1	2/2005	Alexander et al.
2004/0010727	A1	1/2004	Fujinami	2005/0031135	A1	2/2005	Devantier et al.
2004/0012620	A1	1/2004	Buhler et al.	2005/0047605	A1	3/2005	Lee et al.
2004/0014426	A1	1/2004	Moore	2005/0058149	A1	3/2005	Howe
2004/0015252	A1	1/2004	Aiso et al.	2005/0060435	A1	3/2005	Xue et al.
2004/0019497	A1	1/2004	Volk et al.	2005/0062637	A1	3/2005	El Zabadani et al.
				2005/0069153	A1	3/2005	Hall et al.
				2005/0081213	A1	4/2005	Suzuoki et al.
				2005/0100166	A1	5/2005	Smetters et al.
				2005/0100174	A1	5/2005	Howard et al.



## US 10,848,885 B2

Page 8

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2005/0105052 A1	5/2005	McCormick et al.	2007/0192156 A1	8/2007	Gauger
2005/0114538 A1	5/2005	Rose	2007/0206829 A1	9/2007	Weinans et al.
2005/0120128 A1	6/2005	Willes et al.	2007/0220150 A1	9/2007	Garg
2005/0125222 A1	6/2005	Brown et al.	2007/0223725 A1	9/2007	Neumann et al.
2005/0125357 A1	6/2005	Saadat et al.	2007/0249295 A1	10/2007	Ukita et al.
2005/0129240 A1	6/2005	Balfanz et al.	2007/0265031 A1	11/2007	Koizumi et al.
2005/0131558 A1	6/2005	Braithwaite et al.	2007/0271388 A1	11/2007	Bowra et al.
2005/0144284 A1	6/2005	Ludwig et al.	2007/0288610 A1	12/2007	Saint et al.
2005/0147261 A1	7/2005	Yeh	2007/0299778 A1	12/2007	Haveson et al.
2005/0149204 A1	7/2005	Manchester et al.	2008/0002836 A1	1/2008	Moeller et al.
2005/0154766 A1	7/2005	Huang et al.	2008/0007649 A1	1/2008	Bennett
2005/0159833 A1	7/2005	Giaimo et al.	2008/0007650 A1	1/2008	Bennett
2005/0160270 A1	7/2005	Goldberg et al.	2008/0007651 A1	1/2008	Bennett
2005/0166135 A1	7/2005	Burke et al.	2008/0018785 A1	1/2008	Bennett
2005/0168630 A1	8/2005	Yamada et al.	2008/0022320 A1	1/2008	Ver Steeg
2005/0177256 A1	8/2005	Shintani et al.	2008/0025535 A1	1/2008	Rajapakse
2005/0177643 A1	8/2005	Xu	2008/0045140 A1	2/2008	Korhonen et al.
2005/0181348 A1	8/2005	Carey et al.	2008/0065232 A1	3/2008	Igoe
2005/0195205 A1	9/2005	Abrams, Jr.	2008/0066094 A1	3/2008	Igoe
2005/0195823 A1	9/2005	Chen et al.	2008/0066120 A1	3/2008	Igoe
2005/0195999 A1	9/2005	Takemura et al.	2008/0072816 A1	3/2008	Riess et al.
2005/0197725 A1	9/2005	Alexander et al.	2008/0075295 A1	3/2008	Mayman et al.
2005/0198574 A1	9/2005	Lamkin et al.	2008/0077261 A1	3/2008	Baudino et al.
2005/0201549 A1	9/2005	Dedieu et al.	2008/0077619 A1	3/2008	Gilley et al.
2005/0216556 A1	9/2005	Manion et al.	2008/0077620 A1	3/2008	Gilley et al.
2005/0254505 A1	11/2005	Chang et al.	2008/0086318 A1	4/2008	Gilley et al.
2005/0262217 A1	11/2005	Nonaka et al.	2008/0091771 A1	4/2008	Allen et al.
2005/0266798 A1	12/2005	Moloney et al.	2008/0092204 A1	4/2008	Bryce et al.
2005/0266826 A1	12/2005	Vlad	2008/0109852 A1	5/2008	Kretz et al.
2005/0281255 A1	12/2005	Davies et al.	2008/0120429 A1	5/2008	Millington et al.
2005/0283820 A1	12/2005	Richards et al.	2008/0126943 A1	5/2008	Parasnis et al.
2005/0288805 A1	12/2005	Moore et al.	2008/0144861 A1	6/2008	Melanson et al.
2005/0289224 A1	12/2005	Deslippe et al.	2008/0144864 A1	6/2008	Huon et al.
2005/0289244 A1	12/2005	Sahu et al.	2008/0146289 A1	6/2008	Korneluk et al.
2006/0041616 A1	2/2006	Ludwig et al.	2008/0152165 A1	6/2008	Zacchi
2006/0041639 A1	2/2006	Lamkin et al.	2008/0159545 A1	7/2008	Takumai et al.
2006/0045281 A1	3/2006	Korneluk et al.	2008/0162668 A1	7/2008	Miller
2006/0072489 A1	4/2006	Toyoshima	2008/0189272 A1	8/2008	Powers et al.
2006/0095516 A1	5/2006	Wijeratne	2008/0205070 A1	8/2008	Osada
2006/0098936 A1	5/2006	Ikeda et al.	2008/0212786 A1	9/2008	Park
2006/0119497 A1	6/2006	Miller et al.	2008/0215169 A1	9/2008	Debettencourt et al.
2006/0143236 A1	6/2006	Wu	2008/0242222 A1	10/2008	Bryce et al.
2006/0149402 A1	7/2006	Chung	2008/0247554 A1	10/2008	Caffrey
2006/0155721 A1	7/2006	Grunwald et al.	2008/0263010 A1	10/2008	Roychoudhuri et al.
2006/0173844 A1	8/2006	Zhang et al.	2008/0273714 A1	11/2008	Hartung
2006/0179160 A1	8/2006	Uehara et al.	2008/0291863 A1	11/2008	Agren et al.
2006/0193454 A1	8/2006	Abou-Chakra et al.	2008/0303947 A1	12/2008	Ohnishi et al.
2006/0193482 A1	8/2006	Harvey et al.	2009/0011798 A1	1/2009	Yamada
2006/0199538 A1	9/2006	Eisenbach	2009/0017868 A1	1/2009	Ueda et al.
2006/0205349 A1	9/2006	Passier et al.	2009/0031336 A1	1/2009	Chavez et al.
2006/0222186 A1	10/2006	Paige et al.	2009/0060219 A1	3/2009	Inohara
2006/0227985 A1	10/2006	Kawanami	2009/0070434 A1	3/2009	Himmelstein
2006/0229752 A1	10/2006	Chung	2009/0087000 A1	4/2009	Ko
2006/0259649 A1	11/2006	Hsieh et al.	2009/0089327 A1	4/2009	Kalaboukis et al.
2006/0265571 A1	11/2006	Bosch et al.	2009/0097672 A1	4/2009	Buil et al.
2006/0270395 A1	11/2006	Dhawan et al.	2009/0100189 A1	4/2009	Bahren et al.
2006/0281409 A1	12/2006	Levien et al.	2009/0124289 A1	5/2009	Nishida
2006/0287746 A1	12/2006	Braithwaite et al.	2009/0157905 A1	6/2009	Davis
2006/0294569 A1	12/2006	Chung	2009/0164655 A1	6/2009	Pettersson et al.
2007/0003067 A1	1/2007	Gierl et al.	2009/0169030 A1	7/2009	Inohara
2007/0003075 A1	1/2007	Cooper et al.	2009/0180632 A1	7/2009	Goldberg et al.
2007/0022207 A1	1/2007	Millington et al.	2009/0193345 A1	7/2009	Wensley et al.
2007/0038999 A1	2/2007	Millington et al.	2009/0222115 A1	9/2009	Malcolm et al.
2007/0043847 A1	2/2007	Carter et al.	2009/0228919 A1	9/2009	Zott et al.
2007/0047712 A1	3/2007	Gross et al.	2009/0232326 A1	9/2009	Gordon et al.
2007/0048713 A1	3/2007	Plastina et al.	2009/0251604 A1	10/2009	Iyer
2007/0054680 A1	3/2007	Mo et al.	2010/0004983 A1	1/2010	Dickerson et al.
2007/0071255 A1	3/2007	Schobben	2010/0010651 A1	1/2010	Kirkeby et al.
2007/0087686 A1	4/2007	Holm et al.	2010/0031366 A1	2/2010	Knight et al.
2007/0142022 A1	6/2007	Madonna et al.	2010/0049835 A1	2/2010	Ko et al.
2007/0142944 A1	6/2007	Goldberg et al.	2010/0052843 A1	3/2010	Cannistraro
2007/0143493 A1	6/2007	Mullig et al.	2010/0067716 A1	3/2010	Katayama
2007/0169115 A1	7/2007	Ko et al.	2010/0087089 A1	4/2010	Struthers et al.
2007/0180137 A1	8/2007	Rajapakse	2010/0142735 A1	6/2010	Yoon et al.
2007/0189544 A1	8/2007	Rosenberg	2010/0153097 A1	6/2010	Hotho et al.
			2010/0228740 A1	9/2010	Cannistraro et al.
			2010/0272270 A1	10/2010	Chaikin et al.
			2010/0284389 A1	11/2010	Ramsay et al.
			2010/0290643 A1	11/2010	Mihelich et al.

## US 10,848,885 B2

Page 9

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2010/0299639	A1	11/2010	Ramsay et al.	2014/0123005	A1	5/2014	Forstall et al.
2011/0001632	A1	1/2011	Hohorst	2014/0140530	A1	5/2014	Gomes-Casseres et al.
2011/0002487	A1	1/2011	Panther et al.	2014/0161265	A1	6/2014	Chaikin et al.
2011/0044476	A1	2/2011	Burlingame et al.	2014/0181569	A1	6/2014	Millington et al.
2011/0066943	A1	3/2011	Brillon et al.	2014/0219456	A1	8/2014	Morrell et al.
2011/0110533	A1	5/2011	Choi et al.	2014/0226823	A1	8/2014	Sen et al.
2011/0170710	A1	7/2011	Son	2014/0242913	A1	8/2014	Pang
2011/0222701	A1	9/2011	Donaldson et al.	2014/0256260	A1	9/2014	Ueda et al.
2011/0228944	A1	9/2011	Croghan et al.	2014/0267148	A1	9/2014	Luna et al.
2011/0299696	A1	12/2011	Holmgren et al.	2014/0270202	A1	9/2014	Ivanov et al.
2011/0316768	A1	12/2011	McRae	2014/0273859	A1	9/2014	Luna et al.
2012/0029671	A1	2/2012	Millington et al.	2014/0279889	A1	9/2014	Luna et al.
2012/0030366	A1	2/2012	Collart et al.	2014/0285313	A1	9/2014	Luna et al.
2012/0047435	A1	2/2012	Holladay et al.	2014/0286496	A1	9/2014	Luna et al.
2012/0051558	A1	3/2012	Kim et al.	2014/0294200	A1	10/2014	Baumgarte et al.
2012/0051567	A1	3/2012	Castor-Perry	2014/0298174	A1	10/2014	Ikonomov
2012/0060046	A1	3/2012	Millington	2014/0323036	A1	10/2014	Daley et al.
2012/0127831	A1	5/2012	Gicklhorn et al.	2014/0344689	A1	11/2014	Scott et al.
2012/0129446	A1	5/2012	Ko et al.	2014/0355768	A1	12/2014	Sen et al.
2012/0148075	A1	6/2012	Goh et al.	2014/0355794	A1	12/2014	Morrell et al.
2012/0185771	A1	7/2012	Rothkopf et al.	2014/0378056	A1	12/2014	Liu et al.
2012/0192071	A1	7/2012	Millington	2015/0019670	A1	1/2015	Redmann
2012/0207290	A1	8/2012	Moyers et al.	2015/0026613	A1	1/2015	Kwon et al.
2012/0237054	A1	9/2012	Eo et al.	2015/0032844	A1	1/2015	Tarr et al.
2012/0263325	A1	10/2012	Freeman et al.	2015/0043736	A1	2/2015	Olsen et al.
2012/0281058	A1	11/2012	Laney et al.	2015/0049248	A1	2/2015	Wang et al.
2012/0290621	A1	11/2012	Heitz, III et al.	2015/0063610	A1	3/2015	Mossner
2013/0010970	A1	1/2013	Hegarty et al.	2015/0074527	A1	3/2015	Sevigny et al.
2013/0018960	A1	1/2013	Knysz et al.	2015/0074528	A1	3/2015	Sakalowsky et al.
2013/0028443	A1	1/2013	Pance et al.	2015/0098576	A1	4/2015	Sundaresan et al.
2013/0031475	A1	1/2013	Maor et al.	2015/0139210	A1	5/2015	Marin et al.
2013/0038726	A1	2/2013	Kim	2015/0146886	A1	5/2015	Baumgarte
2013/0041954	A1	2/2013	Kim et al.	2015/0201274	A1	7/2015	Ellner et al.
2013/0047084	A1	2/2013	Sanders et al.	2015/0256954	A1	9/2015	Carlsson et al.
2013/0051572	A1	2/2013	Goh et al.	2015/0281866	A1	10/2015	Williams et al.
2013/0052940	A1	2/2013	Brillhart et al.	2015/0286360	A1	10/2015	Wachter et al.
2013/0070093	A1	3/2013	Rivera et al.	2015/0304288	A1	10/2015	Balasaygun et al.
2013/0080599	A1	3/2013	Ko et al.	2015/0365987	A1	12/2015	Weel
2013/0094670	A1	4/2013	Millington	2016/0234615	A1*	8/2016	Lambourne ..... H03G 1/02
2013/0124664	A1	5/2013	Fonseca, Jr. et al.	2017/0188152	A1	6/2017	Watson et al.
2013/0129122	A1	5/2013	Johnson et al.				
2013/0132837	A1	5/2013	Mead et al.				
2013/0159126	A1	6/2013	Elkady				
2013/0167029	A1	6/2013	Friesen et al.				
2013/0174100	A1	7/2013	Seymour et al.				
2013/0174223	A1	7/2013	Dykeman et al.				
2013/0179163	A1	7/2013	Herbig et al.				
2013/0191454	A1	7/2013	Oliver et al.				
2013/0197682	A1	8/2013	Millington				
2013/0208911	A1	8/2013	Millington				
2013/0208921	A1	8/2013	Millington				
2013/0226323	A1	8/2013	Millington				
2013/0230175	A1	9/2013	Bech et al.				
2013/0232416	A1	9/2013	Millington				
2013/0236029	A1	9/2013	Millington				
2013/0243199	A1	9/2013	Kallai et al.				
2013/0253679	A1	9/2013	Lambourne				
2013/0253934	A1	9/2013	Parekh et al.				
2013/0259254	A1	10/2013	Xiang et al.				
2013/0279706	A1	10/2013	Marti et al.				
2013/0287186	A1	10/2013	Quady				
2013/0290504	A1	10/2013	Quady				
2013/0293345	A1	11/2013	Lambourne				
2014/0006483	A1	1/2014	Garmark et al.				
2014/0016784	A1	1/2014	Sen et al.				
2014/0016786	A1	1/2014	Sen				
2014/0016802	A1	1/2014	Sen				
2014/0023196	A1	1/2014	Xiang et al.				
2014/0037097	A1	2/2014	Labosco				
2014/0064501	A1	3/2014	Olsen et al.				
2014/0075308	A1	3/2014	Sanders et al.				
2014/0075311	A1	3/2014	Boettcher et al.				
2014/0079242	A1	3/2014	Nguyen et al.				
2014/0108929	A1	4/2014	Garmark et al.				
2014/0112481	A1	4/2014	Li et al.				

## FOREIGN PATENT DOCUMENTS

CN	101095372	A	12/2007
CN	101292500	A	10/2008
CN	101785182	A	7/2010
EP	0251584	A2	1/1988
EP	0672985	A1	9/1995
EP	0772374	A2	5/1997
EP	1058985	A2	12/2000
EP	1111527	A2	6/2001
EP	1122931	A2	8/2001
EP	1133896	B1	8/2002
EP	1312188	A1	5/2003
EP	1389853	A1	2/2004
EP	2713281		4/2004
EP	1517464	A2	3/2005
EP	0895427	A3	1/2006
EP	1416687	B1	8/2006
EP	1410686		3/2008
EP	2043381	A2	4/2009
EP	2161950	A2	3/2010
EP	1825713	B1	10/2012
EP	0742674	B1	4/2014
EP	2591617	B1	6/2014
EP	2860992	A1	4/2015
GB	2284327	A	5/1995
GB	2338374		12/1999
GB	2379533	A	3/2003
GB	2486183		6/2012
JP	63269633		11/1988
JP	07-210129		8/1995
JP	2000149391	A	5/2000
JP	2001034951		2/2001
JP	2002111817		4/2002
JP	2002123267	A	4/2002
JP	2002358241	A	12/2002
JP	2003037585		2/2003
JP	2003506765	A	2/2003

## US 10,848,885 B2

Page 10

(56)

## References Cited

## FOREIGN PATENT DOCUMENTS

JP	2003101958	4/2003
JP	2003169089 A	6/2003
JP	2004193868 A	7/2004
JP	2005108427	4/2005
JP	2005136457	5/2005
JP	2007241652 A	9/2007
JP	2007288405 A	11/2007
JP	2009506603 A	2/2009
JP	2009135750	6/2009
JP	2009218888	9/2009
JP	2009535708	10/2009
JP	2009538006 A	10/2009
JP	2011010183 A	1/2011
JP	2011130496	6/2011
JP	2011176581	9/2011
KR	20030011128 A	2/2003
KR	20060030713 A	4/2006
TW	439027	6/2001
WO	199525313	9/1995
WO	9709756 A2	3/1997
WO	1999023560	5/1999
WO	199961985	12/1999
WO	0019693 A1	4/2000
WO	2000019693 A1	4/2000
WO	0110125 A1	2/2001
WO	200153994	7/2001
WO	02073851	9/2002
WO	03093950 A2	11/2003
WO	03096741 A2	11/2003
WO	2003093950 A2	11/2003
WO	2005013047 A2	2/2005
WO	2007023120 A1	3/2007
WO	2007127485	11/2007
WO	2007131555	11/2007
WO	2007135581 A2	11/2007
WO	2008046530 A2	4/2008
WO	2008082350 A1	7/2008
WO	2008114389 A1	9/2008
WO	2012050927	4/2012
WO	2012137190 A1	10/2012
WO	2013012582	1/2013
WO	2014004182	1/2014
WO	2014149533 A2	9/2014
WO	2015024881 A1	2/2015

## OTHER PUBLICATIONS

Renkus Heinz Manual; available for sale at least 2004, 6 pages.  
 Request for Ex Parte Reexamination submitted in U.S. Pat. No. 9,213,357 on May 22, 2017, 85 pages.  
 "Residential Distributed Audio Wiring Practices," Leviton Network Solutions, 2001, 13 pages.  
 Ritchie et al., "MediaServer:1 Device Template Version 1.01," Contributing Members of the UPnP Forum, Jun. 25, 2002, 12 pages.  
 Ritchie et al., "UPnP AV Architecture:1, Version 1.0," Contributing Members of the UPnP Forum, Jun. 25, 2002, 22 pages.  
 Ritchie, John, "MediaRenderer:1 Device Template Version 1.01," Contributing Members of the UPnP Forum, Jun. 25, 2002, 12 pages.  
 Roland Corporation, "Roland announces BA-55 Portable PA System," press release, Apr. 6, 2011, 2 pages.  
 Rothermel et al., "An Adaptive Protocol for Synchronizing Media Streams," Institute of Parallel and Distributed High-Performance Systems (IPVR), 1997, 26 pages.  
 Rothermel et al., "An Adaptive Stream Synchronization Protocol," 5th International Workshop on Network and Operating System Support for Digital Audio and Video, 1995, 13 pages.  
 Rothermel et al., "An Adaptive Stream Synchronization Protocol," 5th International Workshop on Network and Operating System Support for Digital Audio and Video, Apr. 18-21, 1995, 12 pages.  
 Rothermel et al., "Clock Hierarchies—An Abstraction for Grouping and Controlling Media Streams," University of Stuttgart Institute of Parallel and Distributed High-Performance Systems, Jan. 1996, 23 pages.

Rothermel et al., "Synchronization in Joint-Viewing Environments," University of Stuttgart Institute of Parallel and Distributed High-Performance Systems, 1992, 13 pages.  
 Rothermel, Kurt, "State-of-the-Art and Future Research in Stream Synchronization," University of Stuttgart, 3 pages.  
 "RVL-6 Modular Multi-Room Controller, Installation & Operation Guide," Nile Audio Corporations, 1999, 46 pages.  
 Schmandt et al., "Impromptu: Managing Networked Audio Applications for Mobile Users," 2004, 11 pages.  
 Schulzrinne et al., "RTP: A Transport Protocol for Real-Time Applications," Network Working Group, RFC: 3550, Standards Track, Jul. 2003, 104 pages.  
 Schulzrinne H., et al., "RTP: A Transport Protocol for Real-Time Applications, RFC 3550," Network Working Group, 2003, pp. 1-89.  
 Simple Network Time Protocol (SNTP), RFC 1361 (Aug. 1992) (D+M\_0397537-46) (10 pages).  
 Simple Network Time Protocol (SNTP), RFC 1769 (Mar. 1995) (D+M\_0397663-76) (14 pages).  
 Simple Service Discovery Protocol/1.0 Operating without an Arbiter (Oct. 28, 1999) (24 pages).  
 Sonos Controller for iPad Product Guide; copyright 2004-2013; 47 pages.  
 Sonos Digital Music System User Guide, Version: 050801, Aug. 2005, 114 pages.  
*Sonos, Inc. v. D&M Holdings*, D&M Supp Opposition Brief including Exhibits, Mar. 17, 2017, 23 pages.  
*Sonos, Inc. v. D&M Holdings*, Expert Report of Jay P. Kesan including Appendices A-P, Feb. 20, 2017, 776 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Complaint for Patent Infringement, filed Oct. 21, 2014, 20 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant's Amended Invalidity Contentions, filed Sep. 14, 2016, 100 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant's Initial Invalidity Contentions, filed Apr. 15, 2016, 97 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant's Preliminary Identification of Indefinite Terms, provided Jul. 29, 2016, 8 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendants' 35 U.S.C. § 282 Notice filed Nov. 2, 2017, 31 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendants' Amended Answer, Defenses, and Counterclaims for Patent Infringement, filed Nov. 30, 2015, 47 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendants' Answer to Plaintiff's Second Amended Complaint, filed Apr. 30, 2015, 19 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendants' First Amended Answer to Plaintiffs' Third Amended Complaint, filed Sep. 7, 2016, 23 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendants' Reply in Support of Partial Motion for Judgment on the Pleadings, filed Jun. 10, 2016, 15 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Exhibit A: Defendants' First Amended Answer to Plaintiffs' Third Amended Complaint, provided Aug. 1, 2016, 26 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Exhibit A: Defendants' Second Amended Answer to Plaintiffs' Third Amended Complaint, filed Sep. 9, 2016, 43 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Exhibit A: Defendants' Second Amended Answer to Plaintiffs' Third Amended Complaint, provided Sep. 9, 2016, 88 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, First Amended Complaint for Patent Infringement, filed Dec. 17, 2014, 26 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Joint Claim Construction Chart, vol. 1 of 3 with Exhibits A-O, filed Aug. 7, 2016, 30 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Opening Brief in Support of Defendants' Partial Motion for Judgment on the Pleadings for Lack of Patent-Eligible Subject Matter, filed May 6, 2016, 27 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Plaintiff Sonos, Inc.'s Opening Claim Construction Brief, filed Sep. 9, 2016, 26 pages.  
*Sonos, Inc. v. D&M Holdings Inc. et al.*, Plaintiff Sonos, Inc.'s Response in Opposition to Defendants' Partial Motion for Judgment on the Pleadings, filed May 27, 2016, 24 pages.

## US 10,848,885 B2

Page 11

(56)

## References Cited

## OTHER PUBLICATIONS

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Reply Brief in Support of Defendants' Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided Nov. 10, 2016, 16 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Reply Brief in Support of Defendants' Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided Sep. 9, 2016, 16 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Second Amended Complaint for Patent Infringement, filed Feb. 27, 2015, 49 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Sonos's Motion to Strike Defendants' New Amended Answer Submitted with their Reply Brief, provided Sep. 15, 2016, 10 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Sonos's Opposition to Defendants' Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided Oct. 31, 2016, 26 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Third Amended Complaint for Patent Infringement, filed Jan. 29, 2016, 47 pages.

*Sonos, Inc. v. D&M Holdings, Inc.* (No. 14-1330-RGA), Defendants' Final Invalidity Contentions (Jan. 18, 2017) (106 pages).

*Sonos, Inc. v. D&M Holdings* (No. 14-1330-RGA), DI 226, Opinion Denying Inequitable Conduct Defenses, Feb. 6, 2017, updated, 5 pages.

*Sonos, Inc. v. D&M Holdings* (No. 14-1330-RGA), DI 242, US District Judge Andrews 101 Opinion, Mar. 13, 2017, 16 pages.

Notice of Allowance dated Jun. 2, 2014, issued in connection with U.S. Appl. No. 13/083,499, filed Apr. 8, 2011, 5 pages.

Notice of Allowance dated Sep. 3, 2015, issued in connection with U.S. Appl. No. 13/705,174, filed Dec. 5, 2012, 4 pages.

Notice of Allowance dated Aug. 4, 2015, issued in connection with U.S. Appl. No. 14/516,867, filed Oct. 17, 2014, 13 pages.

Notice of Allowance dated Dec. 5, 2014, issued in connection with U.S. Appl. No. 14/256,434, filed Apr. 18, 2014, 7 pages.

Notice of Allowance dated Oct. 5, 2012, issued in connection with U.S. Appl. No. 13/204,511, filed Aug. 5, 2011, 11 pages.

Notice of Allowance dated Mar. 6, 2014, issued in connection with U.S. Appl. No. 13/827,653, filed Mar. 14, 2013, 17 pages.

Notice of Allowance dated May 6, 2011, issued in connection with U.S. Appl. No. 11/801,468, filed May 9, 2007, 10 pages.

Notice of Allowance dated Sep. 6, 2013, issued in connection with U.S. Appl. No. 13/619,237, filed Sep. 14, 2012, 10 pages.

Notice of Allowance dated Sep. 6, 2016, issued in connection with U.S. Appl. No. 15/134,767, filed Apr. 21, 2016, 7 pages.

Notice of Allowance dated Apr. 7, 2016, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 40 pages.

Notice of Allowance dated Oct. 7, 2015, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 7 pages.

Notice of Allowance dated Oct. 9, 2015, issued in connection with U.S. Appl. No. 13/435,739, filed Mar. 30, 2012, 4 pages.

Notice of Allowance dated Sep. 9, 2016, issued in connection with U.S. Appl. No. 15/134,761, filed Apr. 21, 2016, 7 pages.

Notice of Allowance dated Mar. 1, 2018, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 7 pages.

Notice of Allowance dated Aug. 10, 2015, issued in connection with U.S. Appl. No. 13/848,904, filed Mar. 22, 2013, 9 pages.

Notice of Allowance dated Jul. 10, 2015, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 7 pages.

Notice of Allowance dated Mar. 10, 2016, issued in connection with U.S. Appl. No. 14/937,523, filed Nov. 10, 2015, 5 pages.

Notice of Allowance dated Nov. 10, 2011, issued in connection with U.S. Appl. No. 11/906,702, filed Oct. 2, 2007, 17 pages.

Notice of Allowance dated Sep. 10, 2014, issued in connection with U.S. Appl. No. 13/892,230, filed May 10, 2013, 5 pages.

Notice of Allowance dated Sep. 10, 2018, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 7 pages.

Notice of Allowance dated Apr. 11, 2016, issued in connection with U.S. Appl. No. 13/864,247, filed Apr. 17, 2013, 21 pages.

Notice of Allowance dated Jan. 11, 2016, issued in connection with U.S. Appl. No. 14/564,544, filed Dec. 9, 2014, 5 pages.

Notice of Allowance dated Jul. 11, 2017, issued in connection with U.S. Appl. No. 14/825,961, filed Aug. 13, 2015, 5 pages.

Notice of Allowance dated Aug. 12, 2015, issued in connection with U.S. Appl. No. 13/435,739, filed Mar. 30, 2012, 27 pages.

Notice of Allowance dated Jun. 12, 2014, issued in connection with U.S. Appl. No. 13/896,829, filed May 17, 2013, 5 pages.

Notice of Allowance dated Jul. 13, 2015, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 22 pages.

Notice of Allowance dated May 13, 2015, issued in connection with U.S. Appl. No. 14/299,847, filed Jun. 9, 2014, 10 pages.

Notice of Allowance dated Nov. 13, 2013, issued in connection with U.S. Appl. No. 13/724,048, filed Dec. 21, 2012, 7 pages.

Notice of Allowance dated Nov. 13, 2017, issued in connection with U.S. Appl. No. 14/563,515, filed Dec. 8, 2014, 11 pages.

Notice of Allowance dated Oct. 13, 2015, issued in connection with U.S. Appl. No. 13/864,251, filed Apr. 17, 2013, 7 pages.

Notice of Allowance dated Jun. 14, 2012, issued in connection with U.S. Appl. No. 12/035,112, filed Feb. 21, 2008, 9 pages.

Notice of Allowance dated Jan. 15, 2019, issued in connection with U.S. Appl. No. 15/487,686, filed Apr. 14, 2017, 8 pages.

Notice of Allowance dated Jul. 15, 2015, issued in connection with U.S. Appl. No. 13/705,174, filed Dec. 5, 2012, 18 pages.

Notice of Allowance dated Mar. 15, 2016, issued in connection with U.S. Appl. No. 14/937,571, filed Nov. 10, 2015, 5 pages.

Notice of Allowance dated Jun. 16, 2009, issued in connection with U.S. Appl. No. 10/861,653, filed Jun. 5, 2004, 11 pages.

Notice of Allowance dated May 16, 2017, issued in connection with U.S. Appl. No. 15/228,685, filed Aug. 4, 2016, 10 pages.

Notice of Allowance dated Jul. 17, 2015, issued in connection with U.S. Appl. No. 13/864,251, filed Apr. 17, 2013, 20 pages.

Notice of Allowance dated Aug. 19, 2016, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 9 pages.

Notice of Allowance dated May 19, 2015, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 7 pages.

Notice of Allowance dated Oct. 19, 2016, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 14 pages.

Notice of Allowance dated Jan. 20, 2016, issued in connection with U.S. Appl. No. 14/465,457, filed Aug. 21, 2014, 10 pages.

Notice of Allowance dated Oct. 21, 2015, issued in connection with U.S. Appl. No. 14/174,244, filed Feb. 6, 2014, 5 pages.

Notice of Allowance dated Oct. 21, 2015, issued in connection with U.S. Appl. No. 14/174,253, filed Feb. 6, 2014, 6 pages.

Notice of Allowance dated Sep. 21, 2015, issued in connection with U.S. Appl. No. 13/297,000, filed Nov. 15, 2011, 11 pages.

Notice of Allowance dated Jan. 22, 2015, issued in connection with U.S. Appl. No. 13/630,565, filed Sep. 28, 2012, 7 pages.

Notice of Allowance dated Sep. 22, 2015, issued in connection with U.S. Appl. No. 13/888,203, filed May 6, 2013, 7 pages.

Notice of Allowance dated May 24, 2017, issued in connection with U.S. Appl. No. 14/806,070, filed Jul. 22, 2015, 5 pages.

Notice of Allowance dated Oct. 24, 2016, issued in connection with U.S. Appl. No. 15/134,761, filed Apr. 21, 2016, 7 pages.

Notice of Allowance dated Oct. 24, 2016, issued in connection with U.S. Appl. No. 15/134,767, filed Apr. 21, 2016, 7 pages.

Notice of Allowance dated Sep. 24, 2015, issued in connection with U.S. Appl. No. 13/705,174, filed Dec. 5, 2012, 7 pages.

Notice of Allowance dated Sep. 24, 2015, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 7 pages.

Notice of Allowance dated Aug. 25, 2017, issued in connection with U.S. Appl. No. 14/505,966, filed Oct. 3, 2014, 5 pages.

Notice of Allowance dated Sep. 25, 2014, issued in connection with U.S. Appl. No. 14/176,808, filed Feb. 10, 2014, 5 pages.

Notice of Allowance dated Aug. 27, 2015, issued in connection with U.S. Appl. No. 13/705,177, filed Dec. 5, 2012, 34 pages.

Notice of Allowance dated Aug. 27, 2015, issued in connection with U.S. Appl. No. 14/505,027, filed Oct. 2, 2014, 18 pages.

Notice of Allowance dated Dec. 27, 2011, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 15 pages.

Notice of Allowance dated Oct. 27, 2015, issued in connection with U.S. Appl. No. 14/299,847, filed Jun. 9, 2014, 5 pages.

Notice of Allowance dated Oct. 28, 2014, issued in connection with U.S. Appl. No. 13/896,037, filed May 16, 2013, 7 pages.

Notice of Allowance dated Jul. 29, 2015, issued in connection with U.S. Appl. No. 13/359,976, filed Jan. 27, 2012, 28 pages.



## US 10,848,885 B2

Page 12

(56)

## References Cited

## OTHER PUBLICATIONS

Notice of Allowance dated Jul. 29, 2015, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 9 pages.

Notice of Allowance dated Aug. 30, 2016, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 7 pages.

Notice of Allowance dated Jul. 30, 2015, issued in connection with U.S. Appl. No. 13/705,178, filed Dec. 5, 2012, 18 pages.

Notice of Allowance dated Aug. 5, 2015, issued in connection with U.S. Appl. No. 13/435,776, filed Mar. 30, 2012, 26 pages.

Notice of Allowance dated Jul. 6, 2015, issued in connection with U.S. Appl. No. 13/297,000, filed Nov. 15, 2011, 24 pages.

Notice of Allowance dated Apr. 7, 2017, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 8 pages.

Notice of Allowance dated Dec. 7, 2018, issued in connection with U.S. Appl. No. 15/228,812, filed Aug. 4, 2016, 7 pages.

Notice of Incomplete Re-Exam Request dated May 25, 2017, issued in connection with U.S. Appl. No. 90/013,959, filed Apr. 2016, 10 pages.

Notice of Intent to Issue Re-Examination Certificate dated Mar. 24, 2017, issued in connection with U.S. Appl. No. 90/013,859, filed Nov. 4, 2016, 10 pages.

Nutzel et al., "Sharing Systems for Future HiFi Systems," IEEE, 2004, 9 pages.

Office Action in Ex Parte Reexamination mailed on Oct. 20, 2017, issued in connection with Reexamination U.S. Appl. No. 90/013,959, filed Jun. 16, 2017, 50 pages.

Palm, Inc., "Handbook for the Palm VII Handheld," May 2000, 311 pages.

Parasound Zpre2 Zone Preamplifier with PTZI Remote Control, 2005, 16 pages.

Park et al., "Group Synchronization in MultiCast Media Communications," Proceedings of the 5th Research on Multicast Technology Workshop, 2003, 5 pages.

Pillai et al., "A Method to Improve the Robustness of MPEG Video Applications over Wireless Networks," Kent Ridge Digital Labs, 2000, 15 pages.

Polycom Conference Composer User Guide, copyright 2001, 29 pages.

Postel, J., "User Datagram Protocol," RFC: 768, USC/Information Sciences Institute, Aug. 1980, 3 pages.

Preinterview First Office Action dated Jun. 8, 2016, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 4 pages.

Pre-Interview First Office Action dated Mar. 10, 2015, issued in connection with U.S. Appl. No. 14/505,027, filed Oct. 2, 2014, 4 pages.

Presentations at WinHEC 2000, May 2000, 138 pages.

PRISMIQ, Inc., "PRISMIQ Media Player User Guide," 2003, 44 pages.

Proficient Audio Systems M6 Quick Start Guide, 2011, 5 pages.

Proficient Audio Systems: Proficient Editor Advanced Programming Guide, 2007, 40 pages.

Programming Interface for WL54040 Dual-Band Wireless Transceiver, AVAG00066, Agere Systems, May 2004, 16 pages.

Radio Shack, "Auto-Sensing 4-Way Audio/Video Selector Switch," 2004, 1 page.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 1, 100 pages.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 2, 100 pages.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 3, 100 pages.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 4, 100 pages.

RadioShack, Pro-2053 Scanner, 2002 Catalog, part 5, 46 pages.

Rane: DragNet software; available for sale at least 2006.

Rangan et al., "Feedback Techniques for Continuity and Synchronization in Multimedia Information Retrieval," ACM Transactions on Information Systems, 1995, pp. 145-176, vol. 13, No. 2.

Real Time Control Protocol (RTCP) and Realtime Transfer Protocol (RTP), RFC 1889 (Jan. 1996) (D+M\_0397810-84) (75 pages).

Realtime Streaming Protocol (RTSP), RFC 2326 (Apr. 1998) (D+M\_0397945-8036) (92 pages).

Realtime Transport Protocol (RTP), RFC 3550 (Jul. 2003) (D+M\_0398235-323) (89 pages).

Re-Exam Final Office Action dated Aug. 5, 2015, issued in connection with U.S. Appl. No. 90/013,423, filed Jan. 5, 2015, 25 pages.

Reexam Non-Final Office Action dated Oct. 17, 2016, issued in connection with U.S. Appl. No. 90/013,756, filed May 25, 2016, 31 pages.

Re-Exam Non-Final Office Action dated Apr. 22, 2015, issued in connection with U.S. Appl. No. 90/013,423, filed Jan. 5, 2015, 16 pages.

Reid, Mark, "Multimedia conferencing over ISDN and IP networks using ITU-T H-series recommendations: architecture, control and coordination," Computer Networks, 1999, pp. 225-235, vol. 31.

RenderingControl:1 Service Template Version 1.01 for UPnP, Version 1.0, (Jun. 25, 2002) (SONDM000115187-249) (63 pages).

Renewed Request for Ex Parte Re-Examination, U.S. Appl. No. 90/013,959 filed Jun. 16, 2017, 126 pages.

Final Office Action dated Mar. 27, 2014, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 29 pages.

Final Office Action dated Jan. 28, 2011, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 21 pages.

Final Office Action dated Jun. 30, 2008, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 30 pages.

Final Office Action dated Jul. 1, 2016, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 11 pages.

Final Office Action dated Jul. 2, 2015, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 11 pages.

Final Office Action dated Aug. 3, 2015, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 13 pages.

Final Office Action dated Dec. 3, 2014, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 12 pages.

Final Office Action dated Jul. 3, 2012, issued in connection with U.S. Appl. No. 13/298,090, filed Nov. 16, 2011, 46 pages.

Final Office Action dated Jun. 3, 2016, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 24 pages.

Final Office Action dated Mar. 3, 2015, issued in connection with U.S. Appl. No. 13/864,251, filed Apr. 17, 2013, 13 pages.

Final Office Action dated Mar. 4, 2015, issued in connection with U.S. Appl. No. 13/848,904, filed Mar. 22, 2013, 16 pages.

Final Office Action dated Mar. 5, 2015, issued in connection with U.S. Appl. No. 13/888,203, filed May 6, 2013, 13 pages.

Final Office Action dated Jan. 7, 2015, issued in connection with U.S. Appl. No. 13/848,932, filed Mar. 22, 2013, 14 pages.

Final Office Action dated Mar. 9, 2015, issued in connection with U.S. Appl. No. 14/516,867, filed Oct. 17, 2014, 14 pages.

Final Office Action dated Aug. 10, 2015, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 26 pages.

Final Office Action dated Feb. 10, 2014, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 13 pages.

Final Office Action dated Aug. 11, 2015, issued in connection with U.S. Appl. No. 13/864,247, filed Apr. 17, 2013, 15 pages.

Final Office Action dated Feb. 11, 2015, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 13 pages.

Final Office Action dated Feb. 11, 2015, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 17 pages.

Final Office Action dated Feb. 12, 2015, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 20 pages.

Final Office Action dated Apr. 13, 2017, issued in connection with U.S. Appl. No. 14/563,515, filed Dec. 8, 2014, 13 pages.

Final Office Action dated Dec. 13, 2016, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 14 pages.

Final Office Action dated Oct. 13, 2011, issued in connection with U.S. Appl. No. 11/853,790, filed Sep. 11, 2007, 10 pages.

Final Office Action dated Oct. 13, 2011, issued in connection with U.S. Appl. No. 12/035,112, filed Feb. 21, 2008, 10 pages.

Final Office Action dated Nov. 14, 2018, issued in connection with U.S. Appl. No. 15/130,919, filed Apr. 15, 2016, 12 pages.

Final Office Action dated Jul. 15, 2015, issued in connection with U.S. Appl. No. 14/504,812, filed Oct. 2, 2014, 18 pages.

Final Office Action dated Jun. 15, 2015, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 25 pages.



## US 10,848,885 B2

Page 13

(56)

## References Cited

## OTHER PUBLICATIONS

Final Office Action dated Dec. 17, 2014, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 36 pages.

Final Office Action dated Oct. 19, 2016, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 14 pages.

Final Office Action dated Jan. 21, 2010, issued in connection with U.S. Appl. No. 11/906,702, filed Oct. 2, 2007, 27 pages.

Final Office Action dated Oct. 22, 2014, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 12 pages.

Final Office Action dated Oct. 23, 2014, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 23 pages.

Final Office Action dated Feb. 24, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 28 pages.

Final Office Action dated May 25, 2016, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 33 pages.

Final Office Action dated Apr. 28, 2015, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2013, 20 pages.

Final Office Action dated Jun. 29, 2015, issued in connection with U.S. Appl. No. 14/465,457, filed Aug. 21, 2014, 13 pages.

Final Office Action dated Jan. 3, 2019, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 16 pages.

Final Office Action dated Nov. 30, 2015, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 26 pages.

Final Office Action dated Apr. 6, 2015, issued in connection with U.S. Appl. No. 14/620,937, filed Feb. 12, 2015, 15 pages.

Final Office Action dated Dec. 7, 2017, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 11 pages.

Fireball DVD and Music Manager DVDM-100 Installation and User's Guide, Copyright 2003, 185 pages.

Fireball MP-200 User's Manual, Copyright 2006, 93 pages.

Fireball Remote Control Guide WD006-1-1, Copyright 2003, 19 pages.

Fireball SE-D1 User's Manual, Copyright 2005, 90 pages.

First Action Interview Office Action Summary dated Apr. 15, 2015, issued in connection with U.S. Appl. No. 14/505,027, filed Oct. 2, 2014, 6 pages.

Fober et al., "Clock Skew Compensation over a High Latency Network," Proceedings of the ICMC, 2002, pp. 548-552.

Fries et al., "The MP3 and Internet Audio Handbook: Your Guide to the Digital Music Revolution," 2000, 320 pages.

Fulton et al., "The Network Audio System: Make Your Application Sing (as Well as Dance)!" The X Resource, 1994, 14 pages.

Gaston et al., "Methods for Sharing Stereo and Multichannel Recordings Among Planetariums," Audio Engineering Society Convention Paper 7474, 2008, 15 pages.

General Event Notification Architecture Base: Client to Arbiter (Apr. 2000) (23 pages).

Sony: BD/DVD Home Theatre System Operating Instructions for BDV-IT1000/BDV-IS1000, Copyright 2008, 159 pages.

Sony: Blu-ray Disc/DVD Home Theatre System Operating Instructions for BDV-IZ1000W, Copyright 2010, 88 pages.

Sony: DVD Home Theatre System Operating Instructions for DAV-DZ380W/DZ680W/DZ880W, Copyright 2009, 136 pages.

Sony: DVD Home Theatre System Operating Instructions for DAV-DZ870W, Copyright 2008, 128 pages.

Sony Ericsson MS500 User Guide, Copyright 2009, 2 pages.

Sony: Home Theatre System Operating Instructions for HT-IS100, Copyright 2008, 168 pages.

Sony: HT-IS100, 5.1 Channel Audio System, last updated Nov. 2009, 2 pages.

Sony: Multi Channel AV Receiver Operating Instructions, 2007, 80 pages.

Sony: Multi Channel AV Receiver Operating Instructions for STR-DN1000, Copyright 2009, 136 pages.

Sony: STR-DN1000, Audio Video Receiver, last updated Aug. 2009, 2 pages.

Sony: Wireless Surround Kit Operating Instructions for WHAT-SA2, Copyright 2010, 56 pages.

Taylor, Marilou, "Long Island Sound," Audio Video Interiors, Apr. 2000, 8 pages.

Third Party Request for Ex Parte Re-Examination, U.S. Appl. No. 90/013,859, filed Nov. 4, 2016, 424 pages.

TOA Corporation, Digital Processor DP-0206 DACsys2000 Version 2.00 Software Instruction Manual, Copyright 2001, 67 pages.

Understanding Universal Plug and Play, Microsoft White Paper (Jun. 2000) (D+M\_0402074-118) (45 pages).

U.S. Appl. No. 60/490,768, filed Jul. 28, 2003, entitled "Method for synchronizing audio playback between multiple networked devices," 13 pages.

U.S. Appl. No. 60/825,407, filed Sep. 12, 2006, entitled "Controlling and manipulating groupings in a multi-zone music or media system," 82 pages.

Universal Plug and Play Device Architecture V. 1.0, (Jun. 8, 2000) (54 pages).

Universal Plug and Play in Windows XP, Tom Fout. Microsoft Corporation (Jul. 2001) (D+M\_0402041-73) (33 pages).

Universal Plug and Play ("UPnP") AV Architecture:1 for UPnP, Version 1.0, (Jun. 25, 2002) (D+M\_0298151-72) (22 pages).

Universal Plug and Play Vendor's Implementation Guide (Jan. 5, 2000) (7 pages).

UPnP AV Architecture:0.83 (Jun. 12, 2002) (SONDM000115483-504) (22 pages).

UPnP Design by Example, A Software Developers Guide to Universal Plug and Play Michael Jeronimo and JackWeast, Intel Press (D+M\_0401307-818) (Apr. 2003) (511 pages).

UPnP; "Universal Plug and Play Device Architecture," Jun. 8, 2000; version 1.0; Microsoft Corporation; pp. 1-54.

U.S. Appl. No. 13/083,499, filed Apr. 8, 2011, "Multi-Channel Pairing in a Media System."

WANCommonInterfaceConfig:1 Service Template Version 1.01 for UPnP, Ver. 1.0 (Nov. 12, 2001) (D+M\_0401820-43) (24 pages).

WANIPConnection:1 Service Template Version 1.01 for UPnP Ver. 1.0 (Nov. 12, 2001) (D+M\_0401844-917) (74 pages).

WANPPPPConnection:1 Service Template Version 1.01 for UPnP, Version 1.0 (Nov. 12, 2001) (D+M\_0401918-2006) (89 pages).

WaveLan High-Speed Multimode Chip Set, AVAGO0003, Agere Systems, Feb. 2003, 4 pages.

WaveLan High-Speed Multimode Chip Set, AVAGO0005, Agere Systems, Feb. 2003, 4 pages.

WaveLAN Wireless Integration Developer Kit (WI-DK) for Access Point Developers, AVAGO0054, Agere Systems, Jul. 2003, 2 pages.

WaveLAN Wireless Integration-Developer Kit (WI-DK) Hardware Control Function (HCF), AVAGO0052, Agere Systems, Jul. 2003, 2 pages.

"Welcome. You're watching Apple TV." Apple TV 1st Generation Setup Guide, Apr. 8, 2008 Retrieved Oct. 14, 2014, 40 pages.

"Welcome. You're watching Apple TV." Apple TV 2nd Generation Setup Guide, Mar. 10, 2011 Retrieved Oct. 16, 2014, 36 pages.

"Welcome. You're watching Apple TV." Apple TV 3rd Generation Setup Guide, Mar. 16, 2012 Retrieved Oct. 16, 2014, 36 pages.

WI-DK Release 2 WaveLan Embedded Drivers for VxWorks and Linux, AVAGO0056, Agere Systems, Jul. 2003, 2 pages.

WI-DK Release 2 WaveLan END Reference Driver for VxWorks, AVAGO0044, Agere Systems, Jul. 2003, 4 pages.

WI-DK Release 2 WaveLan LKM Reference Drivers for Linux, AVAGO0048, Agere Systems, Jul. 2003, 4 pages.

Windows Media Connect Device Compatibility Specification (Apr. 12, 2004) (16 pages).

WPA Reauthentication Rates, AVAGO0063, Agere Systems, Feb. 2004, 3 pages.

Yamaha DME 32 manual: copyright 2001.

Yamaha DME 64 Owner's Manual; copyright 2004, 80 pages.

Yamaha DME Designer 3.5 setup manual guide; copyright 2004, 16 pages.

Yamaha DME Designer 3.5 User Manual; Copyright 2004, 507 pages.

Yamaha DME Designer software manual: Copyright 2004, 482 pages.

"Symantec pcAnywhere User's Guide," v 10.5.1, 1995-2002, 154 pages.

"Systemline Modular Installation Guide, Multiroom System," Systemline, 2003, pp. 1-22.

## US 10,848,885 B2

Page 14

## (56) References Cited

## OTHER PUBLICATIONS

“ZR-8630AV MultiZone AudioNideo Receiver, Installation and Operation Guide,” Niles Audio Corporation, 2003, 86 pages.

ZX135: Installation Manual, LA Audio, Apr. 2003, 44 pages.

*Sonos, Inc. v. D&M Holdings*, Sonos Supp Opening Markman Brief including Exhibits, Mar. 3, 2017, 17 pages.

*Sonos, Inc. v. D&M Holdings*, Sonos Supp Reply Markman Brief including Exhibits, Mar. 29, 2017, 36 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Declaration of Steven C. Visser, executed Sep. 9, 2016, 40 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 1: Defendants’ Invalidity Contentions for U.S. Pat. No. 7,571,014 filed Sep. 16, 2016, 270 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 10: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,219,959 filed Sep. 27, 2016, 236 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 11: Defendants’ Invalidity Contentions for Design U.S. Pat. No. D. 559,197 filed Sep. 27, 2016, 52 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 2: Defendants’ Invalidity Contentions for U.S. Pat. No. 8,588,949 filed Sep. 27, 2016, 224 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 3: Defendants’ Invalidity Contentions for U.S. Pat. No. 8,843,224 filed Sep. 27, 2016, 147 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 4: Defendants’ Invalidity Contentions for U.S. Pat. No. 8,938,312 filed Sep. 27, 2016, 229 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 5: Defendants’ Invalidity Contentions for U.S. Pat. No. 8,938,637 filed Sep. 27, 2016, 213 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 6: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,042,556 filed Sep. 27, 2016, 162 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 7: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,195,258 filed Sep. 27, 2016, 418 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 8: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,202,509 filed Sep. 27, 2016, 331 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Amended Invalidity Contentions Exhibit 9: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Sep. 27, 2016, 251 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 1: Defendants’ Invalidity Contentions for U.S. Pat. No. 7,571,014 filed Apr. 15, 2016, 161 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 10: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,213,357 filed Apr. 15, 2016, 244 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 11: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,219,959 filed Apr. 15, 2016, 172 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 12: Defendants’ Invalidity Contentions for Design U.S. Pat. No. D. 559,197 filed Apr. 15, 2016, 36 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 2: Defendants’ Invalidity Contentions for U.S. Pat. No. 8,588,949 filed Apr. 15, 2016, 112 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 3: Defendants’ Invalidity Contentions for U.S. Pat. No. 8,843,224 filed Apr. 15, 2016, 118 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 4: Defendants’ Invalidity Contentions for U.S. Pat. No. 8,938,312 filed Apr. 15, 2016, 217 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 5: Defendants’ Invalidity Contentions for U.S. Pat. No. 8,938,637 filed Apr. 15, 2016, 177 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 6: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,042,556 filed Apr. 15, 2016, 86 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 7: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,130,771 filed Apr. 15, 2016, 203 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 8: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,195,258 filed Apr. 15, 2016, 400 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Initial Invalidity Contentions Exhibit 9: Defendants’ Invalidity Contentions for U.S. Pat. No. 9,202,509 filed Apr. 15, 2016, 163 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendant’s Preliminary Identification of Prior Art References, provided Jul. 29, 2016, 5 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendants’ Brief in Support of their Motion for Leave to Amend their Answer to Add the Defense of Inequitable Conduct, provided Oct. 12, 2016, 24 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Defendants’ Opposition to Sonos’s Motion to Strike Defendants’ New Amended Answer Submitted with their Reply, provided Oct. 3, 2016, 15 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Exhibit A: Defendants’ Second Amended Answer to Plaintiffs’ Third Amended Complaint, provided Oct. 12, 2016, 43 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Exhibit B: Defendants’ Second Amended Answer to Plaintiffs’ Third Amended Complaint, provided Oct. 12, 2016, 43 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Opening Brief in Support of Defendants’ Motion for Leave to Amend Their Answer to Add the Defense of Inequitable Conduct, provided Aug. 1, 2016, 11 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Order, provided Oct. 7, 2016, 2 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Plaintiff’s Opposition to Defendants’ Motion for Leave to Amend Their Answer to Add the Defense of Inequitable Conduct, provided Aug. 26, 2016, 25 pages.

*Sonos, Inc. v. D&M Holdings Inc. et al.*, Redlined Exhibit B: Defendants’ First Amended Answer to Plaintiffs’ Third Amended Complaint, provided Aug. 1, 2016, 27 pages.

*Sonos, Inc. v. D&M Holdings* (No. 14-1330-RGA), DI 206-1, Transcript of 101 Hearing (Nov. 28, 2016) (28 pages).

*Sonos, Inc. v. D&M Holdings* (No. 14-330-RGA), DI 207, Public Joint Claim Construction Brief (Nov. 30, 2016) (88 pages).

*Sonos, Inc. v. D&M Holdings* (No. 14-1330-RGA), DI 214, D&M Post-Markman Letter (Dec. 22, 2016) (13 pages).

*Sonos, Inc. v. D&M Holdings* (No. 14-1330-RGA), DI 215, Sonos Post-Markman Letter (Dec. 22, 2016) (15 pages).

*Sonos, Inc. v. D&M Holdings* (No. 14-1330-RGA), DI 219, Claim Construction Opinion (Jan. 12, 2017) (24 pages).

*Sonos, Inc. v. D&M Holdings* (No. 14-1330-RGA), DI 221, Claim Construction Order (Jan. 18, 2017) (2 pages).

*Sonos, Inc. v. D&M Holdings* (No. 14-1330-RGA), Markman Hearing Transcript (Dec. 14, 2016) (69 pages).

Sonos Multi-Room Music System User Guide, Version: 091001, 2009, 299 pages.

Sonos Play:3 Product Guide; copyright 2004-2011; 2 pages.

Sonos Play:3 Product Guide; copyright 2004-2012; 14 pages.

Sonos Play:3 Product Guide; copyright 2004-2013; 15 pages.

Sonos Play:3 Teardown; <https://www.ifixit.com/Teardown/Sonos+Play%3A3+Teardown/12475>; 11 pages.

Sony: AIR-SA 50R Wireless Speaker, Copyright 2009, 2 pages.

Sony: Altus Quick Setup Guide ALT-SA32PC, Copyright 2009, 2 pages.

Sony: BD/DVD Home Theatre System Operating Instructions for BDV-E300, E301 and E801, Copyright 2009, 115 pages.

“884+ Automatic Matrix Mixer Control System,” Ivie Technologies, Inc., 2000, pp. 1-4.

Advanced Driver Tab User Interface WaveLan GUI Guide, AVAGO0009, Agere Systems, Feb. 2004, 4 pages.

Advisory Action dated Feb. 2, 2016, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 2, 2013, 8 pages.

## US 10,848,885 B2

Page 15

(56)

## References Cited

## OTHER PUBLICATIONS

- Advisory Action dated Sep. 18, 2008, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 8 pages.
- Advisory Action dated Feb. 1, 2016, issued in connection with U.S. Appl. No. 13/864,247, filed Apr. 17, 2013, 6 pages.
- Advisory Action dated Jun. 1, 2015, issued in connection with U.S. Appl. No. 14/516,867, filed Oct. 17, 2014, 11 pages.
- Advisory Action dated Mar. 2, 2015, issued in connection with U.S. Appl. No. 13/848,932, filed Mar. 22, 2013, 3 pages.
- Advisory Action dated Jan. 5, 2012, issued in connection with U.S. Appl. No. 12/035,112, filed Feb. 21, 2008, 3 pages.
- Advisory Action dated Oct. 5, 2015, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 4 pages.
- Advisory Action dated Sep. 5, 2014, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 3 pages.
- Advisory Action dated Oct. 6, 2016, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 4 pages.
- Advisory Action dated Jan. 8, 2015, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 4 pages.
- Advisory Action dated Jun. 9, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 25, 2013, 3 pages.
- Advisory Action dated Feb. 10, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 3 pages.
- Advisory Action dated Nov. 12, 2014, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 6 pages.
- Advisory Action dated Apr. 15, 2015, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 9 pages.
- Advisory Action dated Apr. 15, 2015, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 9 pages.
- Advisory Action dated Dec. 22, 2011, issued in connection with U.S. Appl. No. 11/853,790, filed Sep. 11, 2007, 2 pages.
- Advisory Action dated Mar. 25, 2015, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 5 pages.
- Advisory Action dated Feb. 26, 2015, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 3 pages.
- Advisory Action dated Nov. 26, 2014, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 9 pages.
- Advisory Action dated Jul. 28, 2015, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 7 pages.
- Advisory Action dated Sep. 28, 2009, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 4 pages.
- Agere Systems' Voice-over-Wireless LAN (VoWLAN) Station Quality of Service, AVAGO0015, Agere Systems, Jan. 2005, 5 pages.
- Akyildiz et al., "Multimedia Group Synchronization Protocols for Integrated Services Networks," *IEEE Journal on Selected Areas in Communications*, 1996 pp. 162-173, vol. 14, No. 1.
- Anonymous, "Information technology—Generic coding of moving pictures and associated audio information—Part Audio," *ISO/IEC 13818-3*, Apr. 1998, pp. 11.
- Anonymous, "Transmission Control Protocol," RFC: 793, USC/Information Sciences Institute, Sep. 1981, 91 pages.
- Audio Authority: How to Install and Use the Model 1154 Signal Sensing Auto Selector, 2002, 4 pages.
- Audio Authority: Model 1154B High Definition AV Auto Selector, 2008, 8 pages.
- AudioSource: AMP 100 User Manual, 2003, 4 pages.
- AudioTron Quick Start Guide, Version 1.0, Mar. 2001, 24 pages.
- AudioTron Reference Manual, Version 3.0, May 2002, 70 pages.
- AudioTron Setup Guide, Version 3.0, May 2002, 38 pages.
- Automatic Profile Hunting Functional Description, AVAGO0013, Agere Systems, Feb. 2004, 2 pages.
- "A/S Surround Receiver AVR-5800," Denon Electronics, 2000, 2 pages.
- "A/S System Controlee, Owner's Manual," B&K Components, Ltd., 1998, 52 pages.
- AVTransport:1 Service Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (66 pages).
- AXIS Communication: AXIS P8221 Network I/O Audio Module, 2009, 41 pages.
- Baldwin, Roberto. "How-To: Setup iTunes Dj on Your Max and iPhone", available at [http://www.maclife.com/article/howtos/howto\\_setup\\_itunes\\_dj\\_your\\_mac\\_andiphone](http://www.maclife.com/article/howtos/howto_setup_itunes_dj_your_mac_andiphone), archived on Mar. 17, 2009, 4 pages.
- Balfanz et al., "Network-in-a-Box: How to Set Up a Secure Wireless Network in Under a Minute," 13th USENIX Security Symposium—Technical Paper, 2002, 23 pages.
- Balfanz et al., "Talking to Strangers: Authentication in Ad-Hoc Wireless Networks," Xerox Palo Alto Research Center, 2002, 13 pages.
- Barham et al., "Wide Area Audio Synchronisation," University of Cambridge Computer Laboratory, 1995, 5 pages.
- Baudisch et al., "Flat Volume Control: Improving Usability by Hiding the Volume Control Hierarchy in the User Interface," 2004, 8 pages.
- Benslimane Abderrahim, "A Multimedia Synchronization Protocol for Multicast Groups," *Proceedings of the 26th Euromicro Conference*, 2000, pp. 456-463, vol. 1.
- Biersack et al., "Intra- and Inter-Stream Synchronization for Stored Multimedia Streams," *IEEE International Conference on Multimedia Computing and Systems*, 1996, pp. 372-381.
- Blakowski G. et al., "A Media Synchronization Survey: Reference Model, Specification, and Case Studies," Jan. 1996, pp. 5-35, vol. 14, No. 1.
- Bluetooth. "Specification of the Bluetooth System: The ad hoc SCATTERNET for affordable and highly functional wireless connectivity," Core, Version 1.0 A, Jul. 26, 1999, 1068 pages.
- Bluetooth. "Specification of the Bluetooth System: Wireless connections made easy," Core, Version 1.0 B, Dec. 1, 1999, 1076 pages.
- Bogen Communications, Inc., ProMatrix Digitally Matrixed Amplifier Model PM3180, Copyright 1996, 2 pages.
- Brassil et al., "Enhancing Internet Streaming Media with Cueing Protocols," 2000, 9 pages.
- LG: RJP-201M Remote Jack Pack Installation and Setup Guide, 2010, 24 pages.
- Lienhart et al., "On the Importance of Exact Synchronization for Distributed Audio Signal Processing," Session L: Poster Session II—ICASSP'03 Papers, 2002, 1 page.
- LinkSys by Cisco, Wireless Home Audio Controller, Wireless-N Touchscreen Remote DMRW1000 Datasheet, Copyright 2008, 2 pages.
- LinkSys by Cisco, Wireless Home Audio Controller, Wireless-N Touchscreen Remote DMRW1000 User Guide, Copyright 2008, 64 pages.
- LinkSys by Cisco, Wireless Home Audio Player, Wireless-N Music Extender DMP100 Quick Installation Guide, Copyright 2009, 32 pages.
- LinkSys by Cisco, Wireless Home Audio Player, Wireless-N Music Extender DMP100 User Guide, Copyright 2008, 65 pages.
- Linux SDK for UPnP Devices v. 1.2 (Sep. 6, 2002) (101 pages).
- Liu et al., "A synchronization control scheme for real-time streaming multimedia applications," *Packet Video*, 2003, 10 pages, vol. 2003.
- Liu et al., "Adaptive Delay Concealment for Internet Voice Applications with Packet-Based Time-Scale Modification," *Information Technologies* 2000, pp. 91-102.
- Louderback, Jim, "Affordable Audio Receiver Furnishes Homes With MP3," *TechTV Vault*. Jun. 28, 2000 retrieved Jul. 10, 2014, 2 pages.
- Machine Translation of JP2004-193868A Wireless Transmission and Reception System and Wireless Transmission and Reception Method, 2 pages.
- Machine Translation of JP2007-2888405A Video Sound Output System, Video Sound Processing Method, and Program, 64 pages.
- Maniactools, "Identify Duplicate Files by Sound," Sep. 28, 2010, <http://www.maniactools.com/soft/music-duplicate-remover/identify-duplicate-files-by-sound.shtml>.
- MediaRenderer:1 Device Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (12 pages).
- MediaServer:1 Device Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (12 pages).
- Microsoft, Universal Plug and Play (UPnP) Client Support ("Microsoft UPnP") (Aug. 2001) (D+M\_0402007-24) (18 pages).



**US 10,848,885 B2**

Page 16

(56)

**References Cited****OTHER PUBLICATIONS**

Microsoft Window's XP Reviewer's Guide (Aug. 2001) (D+M\_0402225-85) (61 pages).

"Microsoft Windows XP File and Printer Share with Microsoft Windows" Microsoft Windows XP Technical Article, 2003, 65 pages.

Mills David L., "Network Time Protocol (Version 3) Specification, Implementation and Analysis," Network Working Group, Mar. 1992, 7 pages.

Mills, David L., "Precision Synchronization of Computer Network Clocks," ACM SIGCOMM Computer Communication Review, 1994, pp. 28-43, vol. 24, No. 2.

"Model MRC44 Four Zone—Four Source Audio/Video Controller/Amplifier System," Xantech Corporation, 2002, 52 pages.

Motorola, "Simplefi, Wireless Digital Audio Receiver, Installation and User Guide," Dec. 31, 2001, 111 pages.

"SMPTE Made Simple: A Time Code Tutor by Timeline," 1996, 46 pages.

Network Time Protocol (NTP), RFC 1305 (Mar. 1992) (D+M\_0397417-536) (120 pages).

"NexSys Software v.3 Manual," Crest Audio, Inc., 1997, 76 pages.

Niederst, Jennifer "O'Reilly Web Design in a Nutshell," Second Edition, Sep. 2001, 678 pages.

Nilsson, M., "ID3 Tag Version 2," Mar. 26, 1998, 28 pages.

Non-Final Office Action dated May 1, 2014, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 31 pages.

Non-Final Office Action dated Dec. 5, 2013, issued in connection with U.S. Appl. No. 13/827,653, filed Mar. 14, 2013, 28 pages.

Non-Final Office Action dated Jan. 5, 2012, issued in connection with U.S. Appl. No. 13/298,090, filed Nov. 16, 2011, 40 pages.

Non-Final Office Action dated May 6, 2014, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 23 pages.

Non-Final Office Action dated Jan. 7, 2014, issued in connection with U.S. Appl. No. 13/896,829, filed May 17, 2013, 11 pages.

Non-Final Office Action dated Sep. 7, 2016, issued in connection with U.S. Appl. No. 13/864,248, filed Apr. 17, 2013, 12 pages.

Non-final Office Action dated Apr. 10, 2013, issued in connection with U.S. Appl. No. 13/619,237, filed Sep. 14, 2012, 10 pages.

Non-Final Office Action dated Feb. 10, 2014, issued in connection with U.S. Appl. No. 13/083,499, filed Apr. 8, 2011, 12 pages.

Non-Final Office Action dated May 12, 2014, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 23 pages.

Non-Final Office Action dated May 14, 2014, issued in connection with U.S. Appl. No. 13/848,932, filed Mar. 22, 2013, 14 pages.

Non-Final Office Action dated Jun. 17, 2014, issued in connection with U.S. Appl. No. 14/176,808, filed Feb. 10, 2014, 6 pages.

Non-Final Office Action dated Dec. 18, 2013, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 12 pages.

Non-Final Office Action dated Jan. 18, 2008, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 38 pages.

Non-Final Office Action dated Apr. 19, 2010, issued in connection with U.S. Appl. No. 11/801,468, filed May 9, 2007, 16 pages.

Non-Final Office Action dated Mar. 19, 2013, issued in connection with U.S. Appl. No. 13/724,048, filed Dec. 21, 2012, 9 pages.

Non-Final Office Action dated Jun. 21, 2011, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 13 pages.

Non-Final Office Action dated Jan. 22, 2009, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 18 pages.

Non-Final Office Action dated Jul. 23, 2014, issued in connection with U.S. Appl. No. 14/256,434, filed Apr. 18, 2014, 12 pages.

Non-Final Office Action dated Jul. 25, 2014, issued in connection with U.S. Appl. No. 14/184,526, filed Feb. 19, 2014, 9 pages.

Non-Final Office Action dated Jul. 25, 2014, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 11 pages.

Non-Final Office Action dated Jun. 25, 2010, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 17 pages.

Non-Final Office Action dated Nov. 25, 2013, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 19 pages.

Non-Final Office Action dated May 27, 2014, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 13 pages.

Non-Final Office Action dated Aug. 20, 2009, issued in connection with U.S. Appl. No. 11/906,702, filed Oct. 2, 2007, 27 pages.

Non-Final Office Action dated Oct. 20, 2016, issued in connection with U.S. Appl. No. 14/563,515, filed Dec. 8, 2014, 10 pages.

Non-Final Office Action dated Sep. 21, 2016, issued in connection with U.S. Appl. No. 15/080,591, filed Mar. 25, 2016, 9 pages.

Non-Final Office Action dated Sep. 21, 2016, issued in connection with U.S. Appl. No. 15/080,716, filed Mar. 25, 2016, 8 pages.

Non-Final Office Action dated Sep. 21, 2016, issued in connection with U.S. Appl. No. 15/088,283, filed Apr. 1, 2016, 9 pages.

Non-Final Office Action dated Sep. 21, 2016, issued in connection with U.S. Appl. No. 15/088,532, filed Apr. 1, 2016, 9 pages.

Non-Final Office Action dated Aug. 22, 2018, issued in connection with U.S. Appl. No. 15/487,686, filed Apr. 14, 2017, 13 pages.

Non-Final Office Action dated Dec. 22, 2014, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 11 pages.

Non-Final Office Action dated Sep. 22, 2016, issued in connection with U.S. Appl. No. 15/088,906, filed Apr. 1, 2016, 9 pages.

Non-Final Office Action dated Sep. 22, 2016, issued in connection with U.S. Appl. No. 15/155,149, filed May 16, 2016, 7 pages.

Non-Final Office Action dated Jun. 23, 2015, issued in connection with U.S. Appl. No. 13/705,176, filed Dec. 5, 2012, 30 pages.

Non-Final Office Action dated Mar. 23, 2015, issued in connection with U.S. Appl. No. 14/299,847, filed Jun. 9, 2014, 14 pages.

Non-Final Office Action dated Oct. 23, 2014, issued in connection with U.S. Appl. No. 13/848,904, filed Mar. 22, 2013, 11 pages.

Non-Final Office Action dated Oct. 23, 2014, issued in connection with U.S. Appl. No. 13/864,251, filed Apr. 17, 2013, 11 pages.

Non-Final Office Action dated Oct. 23, 2014, issued in connection with U.S. Appl. No. 13/888,203, filed May 6, 2013, 9 pages.

Non-Final Office Action dated Sep. 23, 2014, issued in connection with U.S. Appl. No. 13/630,565, filed Sep. 28, 2012, 7 pages.

Non-Final Office Action dated Feb. 24, 2017, issued in connection with U.S. Appl. No. 14/619,813, filed Feb. 11, 2015, 9 pages.

Non-Final Office Action dated May 24, 2016, issued in connection with U.S. Appl. No. 15/134,767, filed Apr. 21, 2016, 12 pages.

Non-final Office Action dated Oct. 24, 2014, issued in connection with U.S. Appl. No. 13/435,776, filed Mar. 30, 2012, 14 pages.

Non-Final Office Action dated Apr. 25, 2018, issued in connection with U.S. Appl. No. 15/130,919, filed Apr. 15, 2016, 13 pages.

Non-Final Office Action dated Feb. 26, 2015, issued in connection with U.S. Appl. No. 14/186,850, filed Feb. 21, 2014, 25 pages.

Non-Final Office Action dated Mar. 26, 2015, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 18 pages.

Non-Final Office Action dated Jan. 27, 2015, issued in connection with U.S. Appl. No. 14/465,457, filed Aug. 21, 2014, 11 pages.

Non-Final Office Action dated Jun. 27, 2008, issued in connection with U.S. Appl. No. 10/861,653, filed Jun. 5, 2004, 19 pages.

Non-Final Office Action dated Mar. 27, 2015, issued in connection with U.S. Appl. No. 13/705,178, filed Dec. 5, 2012, 14 pages.

Non-Final Office Action dated Sep. 27, 2013, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 12 pages.

Non-Final Office Action dated Sep. 27, 2016, issued in connection with U.S. Appl. No. 15/228,685, filed Aug. 4, 2016, 8 pages.

Non-Final Office Action dated Dec. 28, 2015, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 29 pages.

Non-Final Office Action dated Dec. 28, 2016, issued in connection with U.S. Appl. No. 15/343,000, filed Nov. 3, 2016, 11 pages.

Non-Final Office Action dated Jan. 29, 2016, issued in connection with U.S. Appl. No. 14/937,523, filed Nov. 10, 2015, 10 pages.

Non-Final Office Action dated Jun. 29, 2016, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 12 pages.

Non-Final Office Action dated Apr. 30, 2012, issued in connection with U.S. Appl. No. 13/204,511, filed Aug. 5, 2011, 16 pages.

Non-Final Office Action dated Jan. 30, 2015, issued in connection with U.S. Appl. No. 14/290,493, filed May 29, 2014, 29 pages.

Non-Final Office Action dated Jan. 30, 2015, issued in connection with U.S. Appl. No. 14/504,812, filed Oct. 2, 2014, 13 pages.

Non-Final Office Action dated Nov. 30, 2016, issued in connection with U.S. Appl. No. 15/243,186, filed Aug. 22, 2016, 12 pages.

Non-Final Office Action dated Oct. 30, 2018, issued in connection with U.S. Appl. No. 16/128,443, filed Sep. 11, 2018, 21 pages.

## US 10,848,885 B2

Page 17

(56)

## References Cited

## OTHER PUBLICATIONS

Non-Final Office Action dated Sep. 30, 2016, issued in connection with U.S. Appl. No. 13/864,249, filed Apr. 17, 2013, 12 pages.  
Non-Final Office Action dated Oct. 31, 2016, issued in connection with U.S. Appl. No. 14/806,070, filed Jul. 22, 2015, 11 pages.  
North American MPEG-2 Information, "The MPEG-2 Transport Stream," Retrieved from the Internet: URL: <http://www.coolstf.com/mpeg/#ts>, 2006, pp. 1-5.

Notice of Allowability dated Apr. 18, 2013, issued in connection with U.S. Appl. No. 11/853,790, filed Sep. 11, 2007, 4 pages.

Notice of Allowance dated Jan. 31, 2013, issued in connection with U.S. Appl. No. 13/298,090, filed Nov. 16, 2011, 19 pages.

Notice of Allowance dated Dec. 1, 2016, issued in connection with U.S. Appl. No. 15/088,283, filed Apr. 1, 2016, 9 pages.

Notice of Allowance dated Jun. 1, 2017, issued in connection with U.S. Appl. No. 14/808,397, filed Jul. 24, 2015, 5 pages.

Notice of Allowance dated Dec. 2, 2016, issued in connection with U.S. Appl. No. 15/088,532, filed Apr. 1, 2016, 9 pages.

Notice of Allowance dated Dec. 2, 2016, issued in connection with U.S. Appl. No. 15/088,678, filed Apr. 1, 2016, 9 pages.

Notice of Allowance dated Dec. 2, 2016, issued in connection with U.S. Appl. No. 15/089,758, filed Apr. 4, 2016, 9 pages.

Notice of Allowance dated Dec. 2, 2016, issued in connection with U.S. Appl. No. 15/155,149, filed May 16, 2016, 9 pages.

Notice of Allowance dated Jul. 2, 2015, issued in connection with U.S. Appl. No. 13/848,904, filed Mar. 22, 2013, 17 pages.

Notice of Allowance dated Jul. 2, 2015, issued in connection with U.S. Appl. No. 13/888,203, filed May 6, 2013, 19 pages.

Notice of Allowance dated Jul. 2, 2015, issued in connection with U.S. Appl. No. 14/184,935, filed Feb. 20, 2014, 23 pages.

Breebaart et al., "Multi-Channel Goes Mobile: MPEG Surround Binaural Rendering," AES 29th International Conference, Sep. 2-4, 2006, pp. 1-13.

Bretl W.E., et al., MPEG2 Tutorial [online], 2000 [retrieved on Jan. 13, 2009] Retrieved from the Internet(<http://www.bretl.com/mpeghtml/MPEGIndex.htm>), pp. 1-23.

Buerk et al., "AVTransport:1 Service Template Version 1.01," Contributing Members of the UPnP Forum, Jun. 25, 2002, 67 pages.  
Canadian Intellectual Property Office, Canadian Office Action dated Apr. 4, 2016, issued in connection with Canadian Patent Application No. 2,842,342, 5 pages.

Canadian Intellectual Property Office, Canadian Office Action dated Sep. 14, 2015, issued in connection with Canadian Patent Application No. 2,842,342, 2 pages.

Canadian Patent Office, Canadian Office Action dated Aug. 30, 2017, issued in connection with CA Application No. 2947275, 5 pages.

Canadian Patent Office, Office Action dated Apr. 10, 2015, issued in connection with Canadian Patent Application No. 2,832,542, 3 pages.

Cen et al., "A Distributed Real-Time MPEG Video Audio Player," Department of Computer Science and Engineering, Oregon Graduate Institute of Science and Technology, 1995, 12 pages.

Chakrabarti et al., "A Remotely Controlled Bluetooth Enabled Environment," IEEE, 2004, pp. 77-81.

Change Notification: Agere Systems WaveLan Multimode Reference Design (D2 to D3), AVAGO0042, Agere Systems, Nov. 2004, 2 pages.

Chinese Patent Office, First Office Action dated Oct. 12, 2018, issued in connection with Chinese Application No. 201610804134.8, 10 pages.

Chinese Patent Office, Office Action dated Jul. 5, 2016, issued in connection with Chinese Patent Application No. 201380044380.2, 25 pages.

Chinese Patent Office, Office Action dated Nov. 27, 2015, issued in connection with Chinese Patent Application No. 201280028038.9, 26 pages.

Connection Manager: 1 Service Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (25 pages).

ContentDirectory:1 Service Template Version 1.01 for UPnP, Version 1.0 (Jun. 25, 2002) (89 pages).

Corrected Notice of Allowance dated Mar. 12, 2015, issued in connection with U.S. Appl. No. 13/630,565, filed Sep. 28, 2012, 4 pages.

Corrected Notice of Allowance dated Aug. 19, 2015, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 2 pages.

Corrected Notice of Allowance dated Oct. 30, 2015, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 2 pages.

Corrected Notice of Allowance dated Dec. 6, 2017, issued in connection with U.S. Appl. No. 15/228,685, filed Aug. 4, 2016, 5 pages.

Creative, "Connecting Bluetooth Devices with Creative D200," <http://support.creative.com/kb/ShowArticle.aspx?url=http://ask.creative.com:80/SRVS/CGI-BIN/WEB/CGI.EXE/./?St=106,E=000000000396859016,K=9377,Sxi=8,VARSET=ws:http://us.creative.com,case=63350>, available on Nov. 28, 2011, 2 pages.

Crown PIP Manual available for sale at least 2004, 68 pages.

Dannenberg et al., "A System Supporting Flexible Distributed Real-Time Music Processing," Proceedings of the 2001 International Computer Music Conference, 2001, 4 pages.

Dannenberg, Roger B., "Remote Access to Interactive Media," Proceedings of the SPIE 1785, 1993, pp. 230-237.

Day, Rebecca, "Going Elan!" Primedia Inc., 2003, 4 pages.

Deep-Sleep Implementation in WL60011 for IEEE 802.11b Applications, AVAGO0020, Agere Systems, Jul. 2004, 22 pages.

Dell, Inc. "Dell Digital Audio Receiver: Reference Guide," Jun. 2000, 70 pages.

Dell, Inc. "Start Here," Jun. 2000, 2 pages.

"Denon 2003-2004 Product Catalog," Denon, 2003-2004, 44 pages.

Denon AV Surround Receiver AVR-1604/684 User's Manual, 2004, 128 pages.

Denon AV Surround Receiver AVR-5800 Operating Instructions, Copyright 2000, 67 pages.

Designing a UPnP AV MediaServer, Nelson Kidd (2003) (SONDM000115062-116) (55 pages).

Dorwaldt, Carl, "EASE 4.1 Tutorial," Renkus-Heinz, Inc., 2004, 417 pages.

"DP-0206 Digital Signal Processor," TOA Electronics, Inc., 2001, pp. 1-12.

Dynaudio Acoustics Air Series, <http://www.soundonsound.com/sos/sep02/articles/dynaudioair.asp>, 2002, 4 pages.

European Patent Office, European Extended Search Report dated Mar. 7, 2016, issued in connection with EP Application No. 13810340.3, 9 pages.

European Patent Office, European Extended Search Report dated Feb. 28, 2014, issued in connection with EP Application No. 13184747.7, 8 pages.

European Patent Office, European Extended Search Report dated Mar. 31, 2015, issued in connection with EP Application No. 14181454.1, 9 pages.

European Patent Office, European Search Report dated Jul. 5, 2016, issued in connection with European Patent Application No. 16156935.5, 9 pages.

European Patent Office, Examination Report dated Mar. 22, 2016, issued in connection with European Patent Application No. EP14181454.1, 6 pages.

European Patent Office, Examination Report dated Oct. 24, 2016, issued in connection with European Patent Application No. 13808623.6, 4 pages.

European Patent Office, Extended European Search Report dated Jul. 5, 2016, issued in connection with European Patent Application No. 16156940.5, 7 pages.

Falcone, John, "Sonos BU150 Digital Music System review," CNET, CNET [online] Jul. 27, 2009 [retrieved on Mar. 16, 2016], 11 pages Retrieved from the Internet: URL:<http://www.cnet.com/products/sonos-bu150-digital-music-system/>.

Faller, Christof, "Coding of Spatial Audio Compatible with Different Playback Formats," Audio Engineering Society Convention Paper (Presented at the 117th Convention), Oct. 28-31, 2004, 12 pages.



## US 10,848,885 B2

Page 18

(56)

## References Cited

## OTHER PUBLICATIONS

- File History of Re-Examination U.S. Appl. No. 90/013,423.
- Final Office Action dated Jun. 5, 2014, issued in connection with U.S. Appl. No. 13/907,666, filed May 31, 2013, 12 pages.
- Final Office Action dated Jul. 13, 2009, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 16 pages.
- Final Office Action dated Sep. 13, 2012, issued in connection with U.S. Appl. No. 13/297,000, filed Nov. 15, 2011, 17 pages.
- Final Office Action dated Nov. 18, 2015, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 56 pages.
- Final Office Action dated Oct. 21, 2011, issued in connection with U.S. Appl. No. 10/816,217, filed Apr. 1, 2004, 19 pages.
- Final Office Action dated Jul. 23, 2014, issued in connection with U.S. Appl. No. 13/896,037, filed May 16, 2013, 12 pages.
- Hans et al., "Interacting with Audio Streams for Entertainment and Communication," Proceedings of the Eleventh ACM International Conference on Multimedia, ACM, 2003, 7 pages.
- Herre et al., "The Reference Model Architecture for MPEG Spatial Audio Coding," Audio Engineering Society Convention Paper (Presented at the 118th Convention), May 28-31, 2005, 13 pages.
- Home Networking with Universal Plug and Play, IEEE Communications Magazine, vol. 39 No. 12 (Dec. 2001) (D+M\_0402025-40) (16 pages).
- "Home Theater Control Systems," Cinema Source, 2002, 19 pages.
- Horwitz, Jeremy, "Logic3 i-Station25," retrieved from the internet: <http://www.ilounge.com/index.php/reviews/entry/logic3-i-station25/>, last visited Dec. 17, 2013, 5 pages.
- Huang C.M., et al., "A Synchronization Infrastructure for Multicast Multimedia at the Presentation Layer," IEEE Transactions on Consumer Electronics, 1997, pp. 370-380, vol. 43, No. 3.
- IBM Home Director Installation and Service Manual, Copyright 1998, 124 pages.
- IBM Home Director Owner's Manual, Copyright 1999, 67 pages.
- ID3 tag version 2.4.0—Native Frames, Draft Specification, copyright 2000, 41 pages.
- Implicit, LLC v. Sonos, Inc.* (No. 14-1330-RGA), Defendant's Original Complaint (Mar. 3, 2017) (15 pages).
- Integra Audio Network Receiver NAC 2.3 Instruction Manual, 68 pages.
- Integra Audio Network Server NAS 2.3 Instruction Manual, pp. 1-32.
- Integra Service Manual, Audio Network Receiver Model NAC-2.3, Dec. 2002, 44 pages.
- Intel Designing a UPnP AV Media Renderer, v. 1.0 ("Intel AV Media Renderer") (May 20, 2003) (SONDM000115117-62) (46 pages).
- Intel Media Renderer Device Interface ("Intel Media Renderer") (Sep. 6, 2002) (62 pages).
- Intel SDK for UPnP Devices Programming Guide, Version 1.2.1, (Nov. 2002) (30 pages).
- International Bureau, International Preliminary Report on Patentability dated Jan. 8, 2015, issued in connection with International Application No. PCT/US2013/046372, filed on Jun. 18, 2013, 6 pages.
- International Bureau, International Preliminary Report on Patentability, dated Jan. 8, 2015, issued in connection with International Application No. PCT/US2013/046386, filed on Jun. 18, 2013, 8 pages.
- International Bureau, International Preliminary Report on Patentability, dated Oct. 17, 2013, issued in connection with International Application No. PCT/IB2012/052071, filed on Apr. 26, 2012, 7 pages.
- International Bureau, International Preliminary Report on Patentability dated Jan. 30, 2014, issued in connection with International Application No. PCT/US2012/045894, filed on Jul. 9, 2012, 6 pages.
- International Searching Authority, International Search Report dated Aug. 1, 2008, in connection with International Application No. PCT/US2004/023102, 5 pages.
- International Searching Authority, International Search Report dated Aug. 23, 2012, issued in connection with International Application No. PCT/IB2012/052071, filed on Apr. 26, 2012, 3 pages.
- International Searching Authority, International Search Report dated Aug. 26, 2013, issued in connection with International Application No. PCT/US2013/046372, filed on Jun. 18, 2013, 3 pages.
- International Searching Authority, International Search Report dated Dec. 26, 2012, issued in connection with International Application No. PCT/US2012/045894, filed on Jul. 9, 2012, 3 pages.
- International Searching Authority, International Search Report dated Sep. 30, 2013, issued in connection with International Application No. PCT/US2013/046386, filed on Jun. 18, 2013, 3 pages.
- International Searching Authority, Written Opinion dated Aug. 23, 2012, issued in connection with International Application No. PCT/IB2012/052071, filed on Apr. 26, 2012, 6 pages.
- International Searching Authority, Written Opinion dated Aug. 26, 2013, issued in connection with International Application No. PCT/US2013/046372, filed on Jun. 18, 2013, 4 pages.
- International Searching Authority, Written Opinion dated Dec. 26, 2012, issued in connection with International Application No. PCT/US2012/045894, filed on Jul. 9, 2012, 4 pages.
- International Searching Authority, Written Opinion dated Sep. 30, 2013, issued in connection with International Application No. PCT/US2013/046386, filed on Jun. 18, 2013, 6 pages.
- Ishibashi et al., "A Comparison of Media Synchronization Quality Among Reactive Control Schemes," IEEE Infocom, 2001, pp. 77-84.
- Ishibashi et al., "A Group Synchronization Mechanism for Live Media in Multicast Communications," IEEE Global Telecommunications Conference, 1997, pp. 746-752, vol. 2.
- Ishibashi et al., "A Group Synchronization Mechanism for Stored Media in Multicast Communications," IEEE Information Revolution and Communications, 1997, pp. 692-700, vol. 2.
- Issues with Mixed IEEE 802.b/802.11g Networks, AVAGO0058, Agere Systems, Feb. 2004, 5 pages.
- Japanese Patent Office, Decision of Rejection dated Jul. 8, 2014, issued in connection with Japanese Patent Application No. 2012-178711, 3 pages.
- Japanese Patent Office, Notice of Rejection, dated Feb. 3, 2015, issued in connection with Japanese Patent Application No. 2014-521648, 7 pages.
- Japanese Patent Office, Notice of Rejection dated Sep. 15, 2015, issued in connection with Japanese Patent Application No. 2014-220704, 7 pages.
- Japanese Patent Office, Office Action dated Nov. 1, 2016, issued in connection with Japanese Application No. 2015-238682, 7 pages.
- Japanese Patent Office, Office Action dated Jan. 6, 2015, issued in connection with Japanese Patent Application No. 2014-503273, 5 pages.
- Japanese Patent Office, Office Action dated Dec. 18, 2018, issued in connection with Japanese Application No. 2017-211958, 8 pages.
- Japanese Patent Office, Office Action dated May 24, 2016, issued in connection with Japanese Patent Application No. 2014-220704, 7 pages.
- Japanese Patent Office, Office Action dated Mar. 29, 2016, issued in connection with Japanese Patent Application No. JP2015-520288, 12 pages.
- Japanese Patent Office, Office Action Summary dated Feb. 2, 2016, issued in connection with Japanese Patent Application No. 2015-520286, 6 pages.
- Japanese Patent Office, Office Action Summary dated Sep. 8, 2015, issued in connection with Japanese Patent Application No. 2014-503273, 4 pages.
- Japanese Patent Office, Office Action Summary dated Nov. 19, 2013, issued in connection with Japanese Patent Application No. 2012-178711, 5 pages.
- Japanese Patent Office, Translation of Office Action dated Dec. 18, 2018, issued in connection with Japanese Application No. 2017-211958, 6 pages.
- Jo et al., "Synchronized One-to-many Media Streaming with Adaptive Playout Control," Proceedings of SPIE, 2002, pp. 71-82, vol. 4861.

**US 10,848,885 B2**

Page 19

(56)

**References Cited****OTHER PUBLICATIONS**

Jones, Stephen, "Dell Digital Audio Receiver: Digital upgrade for your analog stereo," Analog Stereo, Jun. 24, 2000 retrieved Jun. 18, 2014, 2 pages.

Kou et al., "RenderingControl:1 Service Template Verion 1.01," Contributing Members of the UPnP Forum, Jun. 25, 2002, 63 pages.  
Lake Processors: Lake® LM Series Digital Audio Processors Operation Manual, 2011, 71 pages.

Levergood et al., "AudioFile: A Network-Transparent System for Distributed Audio Applications," Digital Equipment Corporation, 1993, 109 pages.

Non-Final Office Action dated Feb. 29, 2012, issued in connection with U.S. Appl. No. 13/297,000, filed Nov. 15, 2011, 10 pages.

Non-Final Office Action dated Nov. 29, 2010, issued in connection with U.S. Appl. No. 11/801,468, filed May 9, 2007, 17 pages.

Non-Final Office Action dated Jul. 30, 2013 issued in connection with U.S. Appl. No. 13/724,048, filed Dec. 21, 2012, 7 pages.

Non-Final Office Action dated Jul. 31, 2014, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 31 pages.

Non-Final Office Action dated Dec. 1, 2014, issued in connection with U.S. Appl. No. 14/516,867, filed Oct. 17, 2014, 11 pages.

Non-Final Office Action dated Jun. 1, 2016, issued in connection with U.S. Appl. No. 14/184,522, filed Feb. 19, 2014, 21 pages.

Non-Final Office Action dated Jan. 3, 2017, issued in connection with U.S. Appl. No. 14/808,397, filed Jul. 2015, 11 pages.

Non-Final Office Action dated Jun. 3, 2015, issued in connection with U.S. Appl. No. 14/564,544, filed Dec. 9, 2014, 7 pages.

Non-Final Office Action dated Nov. 3, 2016, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 17 pages.

Non-Final Office Action dated Jan. 4, 2017, issued in connection with U.S. Appl. No. 14/825,961, filed Aug. 13, 2015, 11 pages.

Non-Final Office Action dated Jun. 4, 2015, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 16 pages.

Non-Final Office Action dated Mar. 4, 2015, issued in connection with U.S. Appl. No. 13/435,776, filed Mar. 30, 2012, 16 pages.

Non-Final Office Action dated Oct. 4, 2016, issued in connection with U.S. Appl. No. 15/089,758, filed Apr. 4, 2016, 9 pages.

Non-Final Office Action dated Oct. 5, 2016, issued in connection with U.S. Appl. No. 13/864,250, filed Apr. 17, 2013, 10 pages.

Non-Final Office Action dated Oct. 5, 2016, issued in connection with U.S. Appl. No. 13/864,252, filed Apr. 17, 2013, 11 pages.

Non-Final Office Action dated Oct. 6, 2016, issued in connection with U.S. Appl. No. 15/088,678, filed Apr. 1, 2016, 9 pages.

Non-Final Office Action dated Jul. 7, 2015, issued in connection with U.S. Appl. No. 14/174,244, filed Feb. 6, 2014, 9 pages.

Non-Final Office Action dated Oct. 7, 2016, issued in connection with U.S. Appl. No. 15/156,392, filed May 17, 2016, 8 pages.

Non-Final Office Action dated Mar. 8, 2011, issued in connection with U.S. Appl. No. 11/853,790, filed Sep. 11, 2007, 10 pages.

Non-Final Office Action dated Mar. 8, 2016, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 13 pages.

Non-Final Office Action dated Aug. 9, 2016, issued in connection with U.S. Appl. No. 13/871,795, filed Apr. 26, 2013, 31 pages.

Non-Final Office Action dated May 9, 2014, issued in connection with U.S. Appl. No. 13/892,230, filed May 10, 2013, 10 pages.

Non-Final Office Action dated Nov. 1, 2018, issued in connection with U.S. Appl. No. 16/129,758, filed Sep. 12, 2018, 23 pages.

Non-Final Office Action dated Feb. 10, 2016, issued in connection with U.S. Appl. No. 14/937,571, filed Nov. 10, 2015, 9 pages.

Non-Final Office Action dated Mar. 10, 2011, issued in connection with U.S. Appl. No. 12/035,112, filed Feb. 21, 2008, 12 pages.

Non-Final Office Action dated May 10, 2016, issued in connection with U.S. Appl. No. 14/504,812, filed Oct. 2, 2014, 22 pages.

Non-Final Office Action dated Nov. 10, 2016, issued in connection with U.S. Appl. No. 15/243,355, filed Aug. 22, 2016, 11 pages.

Non-Final Office Action dated Jun. 11, 2018, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 14 pages.

Non-Final Office Action dated Dec. 12, 2016, issued in connection with U.S. Appl. No. 15/343,019, filed Nov. 3, 2016, 8 pages.

Non-Final Office Action dated Jun. 12, 2015, issued in connection with U.S. Appl. No. 13/848,932, filed Mar. 22, 2013, 16 pages.

Non-Final Office Action dated Mar. 12, 2015, issued in connection with U.S. Appl. No. 13/705,174, filed Dec. 5, 2012, 13 pages.

Non-Final Office Action dated Oct. 12, 2016, issued in connection with U.S. Appl. No. 14/505,966, filed Oct. 3, 2014, 10 pages.

Non-Final Office Action dated Feb. 13, 2014, issued in connection with U.S. Appl. No. 13/896,037, filed May 16, 2013, 10 pages.

Non-Final Office Action dated Feb. 13, 2015, issued in connection with U.S. Appl. No. 13/013,740, filed Jan. 25, 2011, 14 pages.

Non-Final Office Action dated Jan. 13, 2016, issued in connection with U.S. Appl. No. 14/184,528, filed Feb. 19, 2014, 14 pages.

Non-Final Office Action dated Jun. 13, 2016, issued in connection with U.S. Appl. No. 14/620,937, filed Feb. 12, 2015, 12 pages.

Non-Final Office Action dated Jun. 13, 2016, issued in connection with U.S. Appl. No. 15/134,761, filed Apr. 21, 2016, 10 pages.

Non-Final Office Action dated Mar. 13, 2015, issued in connection with U.S. Appl. No. 13/705,177, filed Dec. 5, 2012, 15 pages.

Non-Final Office Action dated May 14, 2018, issued in connection with U.S. Appl. No. 15/228,812, filed Aug. 4, 2016, 15 pages.

Non-Final Office Action dated Dec. 15, 2016, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 12 pages.

Non-Final Office Action dated Jul. 15, 2015, issued in connection with U.S. Appl. No. 14/174,253, filed Feb. 6, 2014, 9 pages.

Non-Final Office Action dated Nov. 16, 2016, issued in connection with U.S. Appl. No. 15/228,639, filed Aug. 4, 2016, 15 pages.

Non-Final Office Action dated Dec. 17, 2015, issued in connection with U.S. Appl. No. 13/458,558, filed Apr. 27, 2012, 10 pages.

Non-Final Office Action dated Nov. 17, 2014, issued in connection with U.S. Appl. No. 13/864,247, filed Apr. 17, 2013, 11 pages.

Non-Final Office Action dated Nov. 17, 2016, issued in connection with U.S. Appl. No. 14/620,937, filed Feb. 12, 2015, 14 pages.

Non-Final Office Action dated Feb. 18, 2009, issued in connection with U.S. Appl. No. 10/861,653, filed Jun. 5, 2004, 18 pages.

Non-Final Office Action dated Nov. 18, 2014, issued in connection with U.S. Appl. No. 13/435,739, filed Mar. 30, 2012, 10 pages.

Non-Final Office Action dated Jan. 19, 2018, issued in connection with U.S. Appl. No. 14/629,937, filed Feb. 24, 2015, 14 pages.

Non-Final Office Action dated Jun. 19, 2015, issued in connection with U.S. Appl. No. 13/533,105, filed Jun. 26, 2012, 38 pages.

Non-Final Office Action dated Nov. 19, 2014, issued in connection with U.S. Appl. No. 13/848,921, filed Mar. 22, 2013, 9 pages.

AuviTran AVB32-ES User's Manual, 2005, 25 pages.

AuviTran AVKIT-ES for AD8HR User's Manual, 2005, 15 pages.

Chinese Patent Office, Second Office Action and Translation dated Jun. 27, 2019, issued in connection with Chinese Application No. 201610804134.8, 15 pages.

Chinese Patent Office, Translation of Office Action dated Jun. 27, 2019, issued in connection with Chinese Application No. 201610804134.8, 10 pages.

CobraNet Manager, Direct control over your audio network. [www.peakaudio.com/CobraNet/FAQ.html](http://www.peakaudio.com/CobraNet/FAQ.html), 2005 [retrieved online Jul. 12, 2019 at [web.archive.org/web/20050403214230/http://www.peakaudio.com/CobraNet/FAQ/](http://web.archive.org/web/20050403214230/http://www.peakaudio.com/CobraNet/FAQ/)] 13 pages.

Japanese Patent Office, Final Office Action dated Jun. 4, 2019, issued in connection with Japanese Patent Application No. 2017-211958, 8 pages.

Japanese Patent Office, Translation of Final Office Action dated Jun. 4, 2019, issued in connection with Japanese Patent Application No. 2017-211958, 5 pages.

Non-Final Office Action dated Jul. 17, 2019, issued in connection with U.S. Appl. No. 15/130,919, filed Apr. 15, 2016, 15 pages.

Non-Final Office Action dated Aug. 28, 2019, issued in connection with U.S. Appl. No. 16/422,160, filed May 24, 2019, 14 pages.

Non-Final Office Action dated Jul. 5, 2019, issued in connection with U.S. Appl. No. 16/383,565, filed Apr. 12, 2019, 11 pages.

Notice of Allowance dated Jun. 10, 2019, issued in connection with U.S. Appl. No. 16/128,443, filed Sep. 11, 2018, 10 pages.

Notice of Allowance dated May 30, 2019, issued in connection with U.S. Appl. No. 16/129,758, filed Sep. 12, 2018, 7 pages.

Notice of Allowance dated Nov. 4, 2019, issued in connection with U.S. Appl. No. 16/422,160, filed May 24, 2019, 13 pages.

## US 10,848,885 B2

Page 20

(56)

## References Cited

## OTHER PUBLICATIONS

Notice of Allowance dated Sep. 5, 2019, issued in connection with U.S. Appl. No. 16/383,565, filed Apr. 12, 2019, 14 pages.

NewsRoom. Business Wire, Good Guys Unveils Top 10 Holiday Electronics Gifts; Advances in Technology and Lower Prices Across the Industry Make for Great Deals on In-Demand Products This Season, Dec. 3, 2003, 3 pages.

NewsRoom. Bytestechnology Briefing, Feb. 19, 2002, 2 pages.

NewsRoom. CEA Announces 2007 Mark of Excellence Award Winners, Mar. 10, 2007, 3 pages.

NewsRoom. CEDIA Abuzz with Trends—Integrators agree: The hot products at this year's expo are the start of a revolutionary move for the home automation market. Oct. 9, 2006, 4 pages.

NewsRoom. Chicago Sun Times, Wireless stream player hits the right notes, Jan. 17, 2004, 3 pages.

NewsRoom. Computer Shopper, Entertainment geekly: the blueprints have been drawn for a connected home that fuses the PC with entertainment devices. All you have to do is install . . . , Nov. 1, 2003, 6 pages.

NewsRoom. Computer Shopper, Tunes all around, vol. 23; Issue 11, Nov. 1, 2003, 1 page.

NewsRoom. Computer Shopper, What we want: here's the gear our editors are wishing for this year, vol. 23; Issue 12, Dec. 1, 2003, 8 pages.

NewsRoom. Computer Shopper, Wi-Fi meets Hi-Fi: here's how to stream music, still images, and videos to your home entertainment center, Nov. 1, 2003, 5 pages.

NewsRoom. Custom Home, Easy listening: the hard disk is shaping the future of home entertainment. (The Wired House), May 1, 2003, 3 pages.

NewsRoom. D-Link to Supply Omnifi with Exclusive New Antenna for Streaming Audio Throughout the House, Jan. 8, 2004, 3 pages.

NewsRoom. Easdown, R., System Heaven: Custom House Technofile, Nov. 24, 2003, 5 pages.

NewsRoom. Electronic House Expo Announces 2005 Multi-Room Audio/Video Award Winners. Nov. 18, 2005, 3 pages.

NewsRoom. Electronic House Expo Fall 2003 Exhibitor Profiles. Business Wire. Nov. 11, 2003, 7 pages.

NewsRoom. Electronic House Expo Spring 2004 Exhibitor Profiles. Business Wire. Mar. 10, 2004, 7 pages.

NewsRoom. Evangelista, B., Sound and Fury the Latest in Volume and Video at SF Home Entertainment Show, Jun. 6, 2003, 3 pages.

NewsRoom. Fallon et al. The Goods, Jul. 31, 2003, 2 pages.

NewsRoom. Future shocks—Connect: Your ultimate home-entertainment guide, Dec. 4, 2003, 3 pages.

NewsRoom. Greg, T., Rooms with a tune, Jul. 23, 2003, 3 pages.

NewsRoom. Hoffman, A., Computer networks start entertaining, Jun. 1, 2003, 3 pages.

NewsRoom. Home theater systems that are a real blast, New Straits. Jan. 6, 2000, 3 pages.

NewsRoom. IDG's PC World Announces Winners of the 2004 World Class Awards, Jun. 2, 2004, 3 pages.

NewsRoom. InfoComm 2004 Exhibitors vol. 7, Issue 5, May 1, 2004, 24 pages.

NewsRoom. International Herald Tribune, Transmitting media gets easier cheaply, Jan. 31, 2004, 2 pages.

NewsRoom. Latest electronic gadgets unveiled in Las Vegas: Wireless Devices take centre stage, Jan. 13, 2003, 4 pages.

NewsRoom. Linksys Extends Wireless Functionality to the Television, Jul. 14, 2003, 3 pages.

NewsRoom. Linksys Ships Wireless-B Media Link for Streamlined Delivery of Music From PC to Stereo Stream MP3s, Play Lists and Internet Radio to Any Stereo With the Wireless-B Media Link for Music, May 19, 2004, 3 pages.

NewsRoom. Linksys Wireless Home Products Are Hot Tech Gifts for 2003, Nov. 24, 2003, 3 pages.

NewsRoom. Living room expansion—The PC is going from word processor to entertainment hub for many households, Aug. 18, 2003, 4 pages.

NewsRoom. Macy's Returns to Electronics With Home Theater Boutique, Aug. 11, 2003, 2 pages.

NewsRoom. Many different ways to enjoy digital music library, Apr. 29, 2003, 3 pages.

NewsRoom. Marlowe, C., Pad gadgets: home is where the gear is. Oct. 20, 2003, 2 pages.

NewsRoom. Miller II, S. A., Technology gets simpler and smarter, Jan. 14, 2003, 2 pages.

NewsRoom. Miller, M., Adapted for flight: hands-on trial: wireless media adapters send digital entertainment soaring from PC to living room. Sep. 18, 2003, 3 pages.

NewsRoom. Miller, S., Creating Virtual Jukeboxes Gadgets Make Digital Music Portable. Aug. 19, 2003, 3 pages.

NewsRoom. Morning Call, Cutting the cord; Wi-Fi networks connect computers, TVs, DVD players and more without a clutter of wires, Feb. 2, 2003, 5 pages.

NewsRoom. Mossberg, W., PC-stored music sent without wires, Jan. 25, 2004, 2 pages.

NewsRoom. Nadel, B., Beam music, images from PC to stereo, TV: Linksys Wireless-B Media Adapter WMA11B. Nov. 1, 2003, 2 pages.

NewsRoom. Net Briefs, Jul. 21, 2003, 2 pages.

NewsRoom. NetWork World, The Toys of Summer, Sep. 1, 2003, 3 pages.

NewsRoom. Networked C300 Speaks Your Language. Apr. 6, 2003, 3 pages.

NewsRoom. New Camera—Now What? It's easy to go wild printing, sharing your digital photos. Oct. 16, 2003, 2 pages.

NewsRoom. New Products Allow Easier Access to Audio Video on Home Computers, Nov. 9, 2003, 3 pages.

NewsRoom. Newman, H., All-in-one Audio, Video Devices will be next big thing, Jan. 9, 2003, 3 pages.

NewsRoom. Norris, A., Come over to my house. Jan. 23, 2003, 3 pages.

NewsRoom. On the Printer Trail—Ream of new SMB models offers channel a range of sales hooks CRN Test Center finds. Oct. 13, 2003, 5 pages.

NewsRoom. One way to organize and weed Favorites, May 8, 2003, 3 pages.

NewsRoom. Outfitting your personal fortress of solitude, Mar. 14, 2002, 4 pages.

NewsRoom. Philadelphia Inquirer, Wireless solution for stereo sound, Aug. 7, 2003, 3 pages.

NewsRoom. Popular Science, Yamaha Musiccast an easy way to spread music around your home, Dec. 1, 2003, 2 pages.

Acoustic Research. 900MHz Wireless Stereo Speakers Model AW871 Installation and Operation Manual, 2003, 15 pages.

Acoustic Research. 900MHz Wireless Stereo Speakers Model AW871 Installation and Operation Manual, 2007, 12 pages.

Acoustic Research. Wireless Stereo Speakers with Auto-Tuning. Model AW877 Installation and Operation Manual, 2007, 13 pages.

Amazon.com: CD30 c300 Wireless Network MP3 Player (Analog/Digital): Home Audio & Theater, 5 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Amazon.com, Cisco-Linksys Wireless-B Music System WMLS11B, 5 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Amazon.com. Creative Labs Sound Blaster Wireless Music: Electronics, 7 pages, [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Apple. Airport Express, Setup Guide. May 20, 2004, 51 pages.

Apple. Airport Express, Setup Guide. 2004, 48 pages.

Apple Developer Connection. Browsing for Network Services. Nov. 12, 2002, 5 pages.

Apple. NewsRoom, Apple "Open Sources" Rendezvous. Sep. 25, 2002, 2 pages.

Apple. NewsRoom, Apple Ships New AirPort Express with iTunes Jul. 14, 2004, 3 pages.

Apple. NewsRoom, Apple Unveils AirPort Express for Mac & PC Users. Jun. 7, 2004, 3 pages.

Apple. NewsRoom, Developers Rapidly Adopt Apple's Rendezvous Networking Technology, Sep. 10, 2002, 3 pages.



## US 10,848,885 B2

Page 21

(56)

## References Cited

## OTHER PUBLICATIONS

Apple WWDC 2003 Session 105—Rendezvous—YouTube available via <https://www.youtube.com/watch?v=Ge5bsDijGWM> [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Audio Authority. Access EZ: Demonstration Network. Home Audio and Video System Installation Manual, 60 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Beatty et al. Web Services Dynamic Discovery WS-Discovery, Feb. 2004, 35 pages.

Blau, John. News Analysis, Wi-Fi Hotspot Networks Sprout Like Mushrooms, Sep. 2002, 3 pages.

Bluetooth Specification. Advanced Audio Distribution Profile (A2DP) Specification, 2007, 73 pages.

BoomBottle MM Blue Hatch 2-Pack. Blue Hatch Waterproof Dual Pairing Wireless Speakers each with Built-in-MagicMount, 4 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Bootcamp. Digital Music on Your Stereo System. Jan. 10, 2003, 1 page.

Bose Lifestyle SA-2 and SA-3 Stereo Amplifier Owner's Guide, 2004, 32 pages.

Bose. The Bose Lifestyle Powered Speaker System. Owner's Guide. Dec. 20, 2001, 19 pages.

BridgeCo—Wireless Loudspeaker Product Information Version 1.4, 16 Dec. 2003, 5 pages.

BridgeCo. BridgeCo Launches UPnP-Compliant Wireless Audio Adapter: Moving More Digital Audio to More Devices in More Locations, Wirelessly. Sep. 16, 2003, 1 page.

BridgeCo. Company Overview. 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Networked Loudspeaker Product Information, 4 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Professional Loudspeaker—Product Information, 3 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. User Manual, Wireless Audio Adapter. Sep. 22, 2003, 34 pages.

BridgeCo. Vision. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, 5 Factors, 5 Missing Functionalities. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, 5 Key Functions. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, BridgeCo Solution. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Consumer Benefits. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Consumer Demand. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, ENA Applications. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, ENA Deployment. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, ENA Functionality. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, ENA Market. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Entertainment Continuum. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Entertainment Network Adapter. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, New Entertainment. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Vision, Technical Problems. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

BridgeCo. Wireless Audio Adapter, Product Information. 3 pages. [produced by Google in Inv. No. 337-TA-1191 on May 5, 2020].

BridgeCo. Wireless Audio Adapter Reference Design, Product Information. Version 1.3. Oct. 31, 2003, 2 pages.

BridgeCo. Wireless Loudspeaker, Product Information. 4 pages. [produced by Google in Inv. No. 337-TA-1191 on May 5, 2020].

BridgeCo. Wireless Loudspeaker, Product Information. Version 1.4. Dec. 16, 2003, 5 pages.

Buffalo. Link Theater LT-H90 Media Player v1.0, 2003-2008, 38 pages.

Buffalo. LinkTheater PC-P3LWG/DVD, 59 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Business Wire. BridgeCo Adds Wireless Connectivity and Enhances Surround Sound Processing for New Generation Speakers. May 5, 2003, 2 pages.

c200 Wireless Network MP3 Player, Jun. 4, 2003, 1 page.

Creative Sound Blaster Wireless Music, User's Guide, Version 1.0, Aug. 2003, 61 pages.

Creston's Adagio Entertainment System with New AMS Processor Wins Awards at CEDIA, Sep. 29, 2006, 3 pages.

Creston Adagio AMS Media System Operations Guide, 2008, 114 pages.

Creston. Adagio. Home Entertainment is Just the Beginning . . . 2007, 10 pages.

Creston. AVS Forum. Dec. 1, 2007, 9 pages.

Creston, Industry Awards, Creston's Spirit of Innovation has Resulted in the Most Award-Winning Products in the Industry, 2006, 6 pages.

Creston, Industry Awards, Creston's Spirit of Innovation has Resulted in the Most Award-Winning Products in the Industry, 2007, 5 pages.

Crome, Caleb. Logitech Squeezebox Boom Audio Design, 2008, 11 pages.

Dhir, Amit, "Wireless Home Networks—DECT, Bluetooth, Home RF, and Wirelss LANs," XILINX, wp135 (v1.0), Mar. 21, 2001, 18 pages.

Dierks et al. RFC 2246 The TLS Protocol, Jan. 1999, 80 pages.

D-Link. User's Manual, Wireless HD Media Player, Version 1.1, DSM-520, Sep. 28, 2005, 127 pages.

DLNA. Overview and Vision, White Paper, Jun. 2004, 16 pages.

DLNA. Use Case Scenarios, White Paper, Jun. 2004, 15 pages.

Duo Soundolier. Sound & Light: Wireless Speaker Torchieri. Soundolier Integrated Wireless Technologies, 2006, 3 pages.

ECMA. Near Field Communication—White Paper, Ecma/TC32-TG19/2004/1, 9 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

ECMA. Near Field Communication, Ecma/TC32-TG19, Oct. 2002, 15 pages.

ECMA. Standard ECMA-340, Near Field Communication—Interface and Protocol NFCIP-1, Dec. 2002, 66 pages.

Ecma. What is Ecma? 2 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Epson. EpsonNet 802.11B, Convenient Printing Using Wireless Technology, 2002, 2 pages.

Epson. EpsonNet 802.11b, User's Guide, 2002, 68 pages.

Epson Product Support Bulletin. PSB # PSB.2003.05.005, Epson-Net 802.11b Wireless Print Server, Apr. 30, 2003, 30 pages.

Epson Product Support Bulletin. PSB # PSB.2003.05.007, Epson-Net 802.11b Wireless Print Server, Apr. 23, 2003, 10 pages.

Epson Stylus C80WN. Quick Start, 2002, 2 pages.

Epson Stylus C80WN. Setup and Installation, Nov. 2001, 67 pages.

Extron System Integrator Speakers. System Integrator Speaker Series. ExtronNews. Issue 16.2, Winter 2005, 32 pages.

Ez-Stream 11 Mbps Wireless Audio Adapter. Model No. SMCWAA-B. Home Entertainment Networking, 2 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Fielding et al. RFC 2616 Hypertext Transfer Protocol—HTTP/1.1, Jun. 1999, 114 pages.

First Action Pre-Interview Office Action dated Jun. 22, 2017, issued in connection with U.S. Appl. No. 14/516,883, filed Oct. 17, 2014, 4 pages.

First Office Action Interview dated Aug. 30, 2017, issued in connection with U.S. Appl. No. 14/516,883, filed Oct. 17, 2014, 5 pages.

Fried, John J. NewsRoom, Convergence melds personal computer, TV and stereo, Feb. 20, 2003, 4 pages.

Frodigh, Magnus. Wireless ad hoc networking—The art of networking without a network, Ericsson Review No. 4, 2000, 16 pages.

## US 10,848,885 B2

Page 22

(56)

## References Cited

## OTHER PUBLICATIONS

Gateway SOLO 5300 User manual, 305 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Godber et al. Secure Wireless Gateway. RightsLink. Arizona State University, pp. 41-46 [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Golem, WLAN-MP3-Player zum Anschluss an die Stereoanlage, Jun. 1, 2003, 2 pages.

Guttman, Erik. An API for the Zeroconf Multicast Address Allocation Protocol, Jun. 6, 2001, 11 pages.

Guttman, Erik. Autoconfiguration for IP Networking: Enabling Local Communication, Jun. 2001, 6 pages.

Guttman, Erik. Network Working Group, Zeroconf Host Profile Applicability Statement, Internet-Draft, Jul. 20, 2001, 9 pages.

Hawn, Andrew. TechTV, First Look: cd3o c300, 2004, 2 pages.

High Fidelity. New Wave in Speaker Design. Oct. 1980, 130 pages.

HomePod—Wireless Network Digital Music Player with FM Tuner, User Manual, 2003, 16 pages.

HomePod MP-100, Wireless Network Music Player, with USB Jukebox, Internet Radio, and FM Tuner, Specification, 2003, 2 pages.

HomePod. User Manual, Wireless Network Digital Audio Player with FM Tuner, 2003, 49 pages.

How cd30 Network MP3 Players Work, Feb. 2, 2004, 3 pages.

Howe et al. A Methodological Critique of Local Room Equalization Techniques, 5 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

IEEE Standards 8023. Part 3: Carrier sense multiple access with collision detection CSMA/CD access method and physical layer specifications, Mar. 8, 2002, 1562 pages.

Live. Users Guide IS809B Wireless Speaker System, Copyright 2010, 12 pages.

Intel Announces WS-Discovery Spec for Joining Devices and Web Services, Intel Developer Forum Spring 2004, Feb. 17, 2004, 4 pages.

Intel Sees Unified Platform and Ecosystem as Key to Enabling the Digital Home, Intel Developer Forum, Feb. 17, 2004, 4 pages.

Intel Tools Validate First Solutions that Enable Devices to Work Together in the Digital Home, Intel Developer Forum, Feb. 17, 2004, 2 pages.

Intel. Users Manual, An Intel Socket 478 Processor Based Mainboard. Mar. 27, 2003, 96 pages.

Carnoy, David. Parrot DS1120 Wireless Hi-Fi Speaker System Review, Jul. 15, 2008, 4 pages.

Case et al. RFC 1157—A Simple Network Management Protocol, May 1990, 36 pages.

cd30. Audio Control Document V4.2 Released! Sep. 18, 2003, 7 pages.

cd30 Audio Control Protocol. Version 4.2. Sep. 18, 2003, 24 pages.

cd30. Audio Stream Protocol Released. Mar. 9, 2004, 2 pages.

Cd30. Audio Stream Protocol: Version 18. Mar. 9, 2004, 13 pages.

cd30 Backgrounder, 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30. c100 Network MP3 Player. Quick Product Summary. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30. c200 Wireless Network MP3 Player. Quick Product Summary. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30. c300 Extended-Range Wireless Network MP3 Player. Quick Product Summary, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30 C300 Reviews. Digital Audio Receivers (DARs) Reviews by CNET, Mar. 30, 2003, 3 pages.

cd30. Careers, Nov. 21, 2003, 1 page.

cd30. Contact, Dec. 12, 2003, 1 page.

cd30. Corporate Fact Sheet, 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30 FAQs. What problem or need does cd30 address with their products? 2 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30 Frequently-Asked Questions About cd30 Network MP3 Players, Dec. 12, 2003, 6 pages.

cd30 Introduces Family of MP3 Players at this year's Consumer Electronics Show. Jan. 9-12, 2003 Las Vegas convention Center, Feb. 12, 2004, 2 pages.

cd30 Introduces Family of MP3 Players at this year's Consumer Electronics Show. Jan. 9-12, 2003 Las Vegas Convention Center, 2 pages.

cd30 Introduces Family of Wireless Network MP3 Players. Jan. 9-12, 2003 Las Vegas Convention Center, 2 pages.

cd30. Logo page, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30 Management, Dec. 12, 2003, 1 page.

cd30. Management Team, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30. Multi-Player Synchronization. Jan. 15, 2004, 4 pages.

cd30 Network MP3 Player Models, Feb. 1, 2004, 1 page.

Cd30, Network MP3 Player, Product Manual. Copyright 2003, 65 pages.

cd30 Network MP3 Player. Product Manual for c100, c200, and c300, 2003, 65 pages.

cd30. Network MP3 Player. Quick Installation Guide, 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30 Network MP3 Player Reviews. Feb. 1, 2004, 2 pages.

cd30 Network MP3 Player Specifications. Feb. 2, 2004, 2 pages.

cd30 Network MP3 Players, Nov. 18, 2003, 1 page.

cd30 Network MP3 Players c100, c200, and c300, 1 page [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

cd30 Network MP3 Players: Stream music from your PC to your stereo, Nov. 18, 2003, 1 page.

cd30 Network MP3 Players: Stream your MP3s to your stereo! May 24, 2003, 1 page.

cd30. News, Reviews Nov. 21, 2003, 2 pages.

cd30. Product Support. May 10, 2006, 17 pages.

cd30 Product Support Forums. Forum Index, Apr. 15, 2003, 1 page.

cd30 Product Support Forums. Forum Index, Jun. 18, 2003, 1 page.

cd30 Product Support Forums. Forum Index, Feb. 2, 2004, 1 page.

cd30. Product Support Forums. Multiple stereos—multiple cd30s—same music? Nov. 3, 2003, 2 pages.

cd30. Network MP3 Player, Product Manual, 2003, 65 pages.

cd30 Product Support Center, Nov. 19, 2003, 1 page.

CES: MP3-Player mit Pfiff, Jan. 13, 2003, 4 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Cheshire et al. RFC 3927—Dynamic Configuration of IPv4 Link-Local Addresses, 2005, 34 pages.

Cheshire et al. Zero Configuration Networking: The Definitive Guide. Dec. 2005, 288 pages.

Clipsal. Multi Room Audio Amplifier, User's Guide, V1.0, Dec. 2005, 28 pages.

Clipsal. Multi Room Audio Matrix Switcher, User's Guide, 560884, V1.0, Dec. 2005, 20 pages.

C-Media. CM102-A/102S USB 2CH Audio Controller, Data Sheet. Version 1.4. May 21, 2003, 20 pages.

CNET. Wireless gizmo for PC music hits home, Sep. 30, 2003, 4 pages.

Compaq et al., Universal Serial Bus Specification, Revision 2.0, Apr. 27, 2000, 650 pages.

Philips Leads Consumer Electronics Industry with 21 CES Innovation Awards. Business Wire. 2004 International CES, Jan. 6, 2004, 3 pages.

Philips. MC W7708. Wireless PC Link Quick Installation. Published Dec. 22, 2004, 8 pages.

Philips. MCW770 Leaflet. Remote Control MP3 Music from Your PC . . . Wirelessly. MP3 Micro Hi-Fi System with 5 CD Tray Changer. Published Mar. 2, 2004, 2 pages.

Philips. MCW770 Quick Use Guide. English version. Published Dec. 22, 2004, 4 pages.

Philips Media Manager 3.3.12.0004 Release Notes, last modified Aug. 29, 2006, 2 pages.

Philips. Media Manager Software—English version: PMM 3.3.12, software/ source code available via zip file ("Media Manager Software—English") published Sep. 15, 2004, 3 pages. [online],



## US 10,848,885 B2

Page 23

(56)

## References Cited

## OTHER PUBLICATIONS

[retrieved on Feb. 24, 2020]. Retrieved from the Internet URL : [https://www.usa.philips.com/c-p/MCW770\\_37/-/support](https://www.usa.philips.com/c-p/MCW770_37/-/support). Philips. PC Software version: V.12.1, software/ source code available via zip file ("PC Software") published Sep. 15, 2004, 3 pages. [online], [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL : [https://www.usa.philips.com/c-p/MCW770\\_37/-/support](https://www.usa.philips.com/c-p/MCW770_37/-/support). Philips. Wireless PC Link Micro MCW770 Custom Installation, User Manual, published Aug. 24, 2004, 61 pages. Rocketfish Wireless Outdoor Speaker RF-RBWS02 User Guide, 2009, 33 pages. snarfed/p4sync. GitHub: A library and plugins for a few music players that (attempts to) synchronize playback across multiple computers, 2 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved online URL: <https://github.com/snarfed/p4sync>. Software & drivers. Micro Audio System MCW770/37. Philips. Copyright 2004-2020, 3 pages [online]. [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL: [https://www.usa.philips.com/c-p/MCW770\\_37/-/support](https://www.usa.philips.com/c-p/MCW770_37/-/support). *Sonos, Inc. v. Google LLC*, Appendix A to Respondents' Response to the Complaint and Notice of Investigation, filed Feb. 27, 2020, 2 pages. *Sonos, Inc. v. Google LLC*, Appendix B to Respondents' Response to the Complaint and Notice of Investigation, filed Feb. 27, 2020, 176 pages. *Sonos, Inc. v. Google LLC*, Respondents' Response to the Complaint and Notice of Investigation, filed Feb. 27, 2020, 46 pages. *Sonos v. Google*. Exhibit A to Respondents' Initial Invalidity Contentions dated Apr. 29, 2020, 194 pages. *Sonos v. Google*. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 10,439,896, Exhibits 1-16 and B, dated Apr. 29, 2020, 1102 pages. *Sonos v. Google*. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 10,209,953, Exhibits 1-10 and B, dated Apr. 29, 2020, 288 pages. *Sonos v. Google*. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 8,588,949, Exhibits 1-19 and B, dated Apr. 29, 2020, 280 pages. *Sonos v. Google*. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 9,195,258, Exhibits 1-10 and B, dated Apr. 29, 2020, 345 pages. *Sonos v. Google*. Respondents' Initial Invalidity Claim Charts for U.S. Pat. No. 9,219,959, Exhibits 1-9 and B, dated Apr. 29, 2020, 344 pages. *Sonos v. Google*. Respondents' Initial Invalidity Contentions dated Apr. 29, 2020, 200 pages. Squeezebox by Logitech. Owner's Guide, 2007, 32 pages. Squeezebox Duet Network Music System by Logitech. User Guide English (North America), 2008, 45 pages. Squeezebox Network Music Player. Owner's Manual, Slim Devices, 2003, 22 pages. Step-by-step P4 Connection. P4 Poster (without music), 5 pages [online], [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: [https://snarfed.org/p4\\_poster/index.html](https://snarfed.org/p4_poster/index.html). Structured Media Components. Leviton Integrated Networks, last modified Apr. 10, 2006, 28 pages. Support. Manuals & Documentation. Micro Audio System MCW770/37. Philips. Copyright 2004-2020, 3 pages. [online], [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL: [https://www.usa.philips.com/c-p/MCW770\\_37/-/support](https://www.usa.philips.com/c-p/MCW770_37/-/support). Synchronizing mp3 playback. 3 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: [https://snarfed.org/synchronizing\\_mp3\\_playback](https://snarfed.org/synchronizing_mp3_playback). Teirikangas, Jussi. HAVi: Home Audio Video Interoperability. Helsinki University of Technology, 2001, 10 pages. TOA Electronics, Inc. DP-0206 Digital Signal Processor. DACsys 2000, 2001, 12 pages. UPnP AV Architecture:0.83 for UPnP Version 1.0, Jun. 12, 2002, copyright 2000, 22 pages.

UPnP Forum. UPnP Device Architecture 1.0. Oct. 15, 2008, 80 pages. Weverka et al. Windows XP Gigabook for Dummies. Wiley Publishing, Inc. 2004, 915 pages. Wireless Home Audio Director. Wireless N Music Player with Integrated Amplifier DMC250. Datasheet. Linksys by Cisco. Fill Your Home with Music, 2008, 2 pages. Yahoo Groups. Exstreamer. Barix Exstreamer. Access via Wayback Machine <http://groups.yahoo.com/group/exstreamer/> Dec. 22, 2013, 1 page. Yamaha DME Designer 3.0 Owner's Manual; Copyright 2008, 501 pages. Introducing Roomlink Network Media Receiver—PCNA-MR10, Sony Vaio, 2003, 2 pages. IPR Details—Apple Computer's Statement About IPR Claimed in draft-ietf-zeroconf-ipv4-linklocal, Apr. 26, 2004, 3 pages. Japanese Patent Office, English Translation of Office Action dated Jun. 2, 2020, issued in connection with Japanese Application No. 2017-211958, 6 pages. Japanese Patent Office, Office Action and Translation dated Jun. 2, 2020, issued in connection with Japanese Patent Application No. 2017-211958, 9 pages. Johnson, Ian. SMC EZ-Stream Universal Wireless Multimedia Receiver—The Globe and Mail, Dec. 3, 2003, 6 pages. Kostianen, K., Intuitive Security Initiation Using Location-Limited Channels. Helsinki University of Technology, Master's Thesis Apr. 14, 2004, 86 pages. Kraemer, Alan. Two Speakers Are Better Than 5.1—IEEE Spectrum, May 1, 2001, 6 pages. Linksys 2.4GHz Wireless-B—User Guide Media Link for Music Model WML11B/WMLS11B, 68 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020]. Linksys 2.4GHz Wireless-B—User Guide V2 Model WMA11B, 68 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020]. Linksys. Quick Installation for Windows XP only. Wireless-B Media Adapter, 2 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020]. Linksys. Wireless Adapters, 2003, 2 pages. Linksys. Wireless PrintServer, User Guide, Model No. WPS11 Version 3, 2002, 31 pages. Linksys Wireless-B Media Adapter—User Guide V1 Model WMA11B, 2003, 32 pages. Linksys. Wireless-B Media Adapter, Product Data, Model No. WMA11B, 2003, 2 pages. Linksys. Wireless-B Media Adapter, WMA11B, 2003, 2 pages. Ljungstrand et al. UBICOMP 2002, Adjunct Proceedings, Fourth International Conference on Ubiquitous Computing, 2002, 90 pages. Logitech Slimserver. Server for Logitech Squeezebox Players. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020]. Logitech/slimserver. Github. 1 page. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020]. Logitech/Slimserver. Github. Version 23 Release. May 19, 2002. 2 pp. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020]. Marchetti, Nino. EdgeReview, CES 2003 Home Network Entertainment, Jan. 28, 2003, 2 pages. McGlaun, Shane. Best Buy unveils new Rocketboost RF-RBKIT whole home audio solution and more. Oct. 22, 2009, 7 pages. MediaLounge Entertainment Network D-Link DSM-320 Wireless Media Player Manual v 1.0, 59 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020]. Micro-Star International. 865PE Neo2. MS-6728 v1.X ATX Mainboard. Version 1.1. Apr. 2003, 118 pages. Miller II, Stanley. Technology gets simpler and smarter. JSoOnline Milwaukee Journal Sentinel, Jan. 13, 2003, 3 pages. Moses, B., Home Networking Using IEEE 1394 in Combination with Other Networking Technologies. Audio Delivery. The Changing Home Experience—AES 17 UK Conference 2002, 16 pages. Muherim et al. On the Performance of Clock Synchronization Algorithms for a Distributed Commodity Audio System. Audio Engineering Society Convention Paper presented at 114th Convention Mar. 22-25, 2003, 12 pages.

## US 10,848,885 B2

Page 24

(56)

## References Cited

## OTHER PUBLICATIONS

Murph, Darren. Rocketfish Wireless Whole Home Audio System Cuts the Cord on All Your Speakers. Engadget. October 23, 2009, 9 pages.

Musica MU4602. Audio Distribution System. Data Sheet, 2004, 2 pages.

MusicCAST. Interactive Wireless. Home Music Network System, 6 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

MusicCAST System—About the Quick Manual, 1999, 7 pages.

NETGEAR. User's Manual for the MP101 Digital Music Player, Version 1.2, May 2004, 48 pages.

NetStreams. Musica MU4602 Audio Distribution System. Data Sheet. Copyright 2004, 2 pages.

NetStreams. Panorama PAN6400 Multi-Room Video & Control System Installation Guide, Jan. 2, 2006, 64 pages.

NetStreams Product Catalog 2003-2004. Creating the Future of Home Entertainment Today 20 pages.

Network Working Group. Zeroconf Multicast Address Allocation Protocol, Internet-Draft, Oct. 22, 2002, 14 pages.

NewRoom. Sirius, XM Companies Flood Cedia with New Products, Sep. 15, 2003, 2 pages.

NewRoom. SMC Ships New EZ-Stream Universal 80211ag Wireless Router, Jan. 14, 2004, 3 pages.

NewsRoom. AP DataStream, Wall Street Journal Digest, Jan. 15, 2004, 3 pages.

NewsRoom. AP Online, AP Technology NewsBrief. Dec. 26, 2003, 2 pages.

NewsRoom. AP Online, AP Technology NewsBrief. Dec. 27, 2003, 2 pages.

NewsRoom. Belleville News Democrat, Tunes, Pictures From Computer Can Be Sent to Your TV, Stereo, Dec. 27, 2003, 2 pages.

NewsRoom. BridgeCo Successfully Concludes Second Financing Round of US \$13.3 Million, Business Wire, Jan. 9, 2003, 3 pages.

NewsRoom. Business Line, Cisco arm rolls out products for SOHO. Nov. 5, 2003, 2 pages.

NewsRoom. Business Wire, BridgeCo Adds Wireless Connectivity and Enhances Surround Sound Processing for New Generation Speakers. May 5, 2003, 3 pages.

NewsRoom. Business Wire, BridgeCo Launches Entertainment Network Adapter at CES2003, Jan. 9, 2003, 3 pages.

NewsRoom. Business Wire, BridgeCo Launches Entertainment Network Adapter for Pro Audio at NAMM Show, Jan. 16, 2003, 3 pages.

NewsRoom. Business Wire, BridgeCo Opens USA Business Development HQ in Silicon Valley and Expands Management Team, Mar. 15, 2004, 3 pages.

NewsRoom. Business Wire, BridgeCo Releases Silicon and Firmware Platform Compatible with Microsoft Windows Media Connect and Windows Media DRM Technology. May 3, 2004, 3 pages.

NewsRoom. Business Wire, CSR and BridgeCo Launch Design for New Generation Wireless Speakers; Transforms Traditional Speakers into Portable Internet Radio, May 6, 2003, 3 pages.

NewsRoom. Business Wire, Epson Announces the EPSON Stylus Photo 900: The First Photo Printer Under \$200 to Print Directly Onto CDs and DVDs; New Printer Offers a Complete Printing Solution for Digital Lifestyles, Apr. 16, 2003 4 pages.

NewsRoom. PR Newswire, "Home Director Announces Availability of AudioPoint Receiver," Sep. 27, 2002, 4 pages.

NewsRoom. Preview the New EZ-Stream Wireless Audio Adapter at CES Jan. 8-11, 2004 BridgeCo Booth 19629, Jan. 7, 2004, 3 pages.

NewsRoom. Receiver Lets Stereo Join The Wi-Fi Band, Apr. 10, 2003, 2 pages.

NewsRoom. Rogers, P., Speaker Screech: The End Is Near, Apr. 8, 2003, 2 pages.

NewsRoom. San Jose Mercury News, Intel Fund to Invest in Digital Home, Jan. 7, 2004, 2 pages.

NewsRoom. Science & Technology: Wired for sound and video, Jan. 14, 2004, 3 pages.

NewsRoom, Sears reveals plans for new Eatons stores, Oct. 26, 2000, 3 pages.

NewsRoom. Seattle Times, Inventions real stars of the show As speeches predict future 100,000 browse 'superstore', Jan. 13, 2003, 4 pages.

NewsRoom, Sensible Sound, Goin' to a show-show, Surveying the Soundscape, Jun. 1, 2003, 8 pages.

NewsRoom. Shaw, K., Cool Tools, Jan. 20, 2003, 2 pages.

NewsRoom. Sheehan, W., More brains, less brawn. Sep. 1, 2003, 3 pages.

NewsRoom. Sidener, J., Everett Roach, Jul. 14, 2003, 2 pages.

NewsRoom. Sirius XM Companies Flood Cedia With New Products. Satellite Week. Sep. 15, 2003, 2 pages.

NewsRoom. Slim Devices Introduces Slimserver, Nov. 18, 2003, 2 pages.

NewsRoom. Slim Devices Introduces Slimserver. PR Newswire. Nov. 18, 2003, 2 pages.

NewsRoom. Slim Devices Introduces Squeezebox, Nov. 18, 2003, 2 pages.

NewsRoom. SMC Sponsors Canada's First Combined 'LAN Event' for Gamers: DreamlanSMC, Jan. 15, 2004, 2 pages.

NewsRoom. SMC Sponsors Canada's First Combined 'LAN Event' for Gamers: DreamlanSMC, Jan. 15, 2004, 3 pages.

NewsRoom. SMC Sponsors Home by Design Showhouse/Connected by Design Tour, Jan. 6, 2004, 3 pages.

NewsRoom. SMC Teams with Get Digital to Offer Free Music Conversion to Its Wireless Audio Adapter Users, Feb. 23, 2004, 3 pages.

NewsRoom. SMC teams with Get Digital to offer free music conversion to wireless users, Mar. 29, 2004, 1 page.

NewsRoom. SMC to Offer Home Entertainment Networking Bundle With New Intel Desktop Boards, Nov. 3, 2003, 3 pages.

NewsRoom. Sonic divide crumbles, 2001 WLN 5430795. Sep. 5, 2001, 3 pages.

NewsRoom. Sound and Fury the Latest in Volume And Video At SF Home Entertainment Show Jun. 6, 2003, 3 pages.

NewsRoom. Sound Blaster Goes Wireless, Sep. 30, 2003, 3 pages.

NewsRoom. St. Paul Pioneer Press, Guide to Better Giving You Know These People. Why Is It So Hard to Buy for Them? Maybe It's Not: Everyone Need Technology, From the Littlest Angel to the Most Resistant Grandparent, Nov. 24, 2003, 6 pages.

NewsRoom. Sullivan, A., PluggedIn—Digital music migrates to the home stereo, Oct. 28, 2003, 3 pages.

NewsRoom. Tech along, Jan. 25, 2004, 3 pages.

NewsRoom. Technology Life in the iPad. Mar. 15, 2007, 5 pages.

NewsRoom. Televisions defy hi-tech trend for minimalism, Feb. 19, 2004, 3 pages.

NewsRoom. The 50 Best Music Systems, Dec. 13, 2003, 15 pages.

NewsRoom. The Age (Australia), Fresh Gadgets, 2001 WLN 13294645, Sep. 7, 2001, 3 pages.

NewsRoom. The Dallas Morning News, Honorable mentions worth a look, Nov. 20, 2003, 2 pages.

NewsRoom. The Dallas Morning News, Innovations Hasten Trend of On-the-Go Music, Video, Technology, Jan. 16, 2003, 4 pages.

NewsRoom. The Dallas Morning News, Wireless Technology Focus of Consumer Electronics Show in Las Vegas, Jan. 9, 2003, 4 pages.

NewsRoom, The Goods Whats' New What's Hot, Nov. 9, 2000, 2 pages.

NewsRoom. The Next Ace in the Hole?—Epson HP set the stage for promising alternatives to wired solutions in vertical markets, Jan. 14, 2002, 3 pages.

NewsRoom. The Orange County Register, Holiday Season Brings Gift Ideas for Tech-Heads, Gadget Groupie, Dec. 8, 2003, 4 pages.

NewsRoom. The personal computer shows its creative side. Technology has discovered its next "killer app." Aug. 14, 2003, 3 pages.

NewsRoom. The top 25: computer shopper editors handpick this month's best desktops notebooks digital audio receivers, handhelds, and software. Nov. 1, 2003, 3 pages.

NewsRoom. The toys of summer: Some cool tools that will get you through the lazy days. Sep. 1, 2003, 3 pages.

NewsRoom. The wide world of Wi-Fi: wherever you are, wireless networking is where it's at. Find out which Wi-Fi components will help you stay connected while . . . May 1, 2004, 7 pages.

## US 10,848,885 B2

Page 25

(56)

## References Cited

## OTHER PUBLICATIONS

- NewsRoom. Ticker, Aug. 1, 2003, 2 pages.
- NewsRoom. Washington Post, Ask the Computer Guy, Jan. 11, 2004, 2 pages.
- NewsRoom. Yamaha Announces the Worlds First Wireless Home Music System. Aug. 11, 2003, 2 pages.
- NewsRoom. Yamaha Musiccast an easy way to spread music around your home. Dec. 1, 2003, 2 pages.
- NewsRoom.Slim Devices Introduces Squeezebox. PR Newswire. Nov. 18, 2003, 2 pages.
- Niles SI-1230. Systems Integration Amplifier. Installation & Operation Guide, 2009, 32 pages.
- Niles SI-1260. Systems Integration Amplifier. Installation & Operation Guide, 2000, 32 pages.
- Olenick, Doug. Networked MP3 Player Lineup Bows From cd30. Jan. 9, 2003, 6 pages.
- European Patent Office, European Office Action dated Sep. 16, 2019, issued in connection with European Application No. 17198867. 8, 6 pages.
- Non-Final Office Action dated Sep. 27, 2019, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 13 pages.
- Sonos, Inc. v. Implicit, LLC*: Declaration of Roman Chertov in Support of the Inter Partes Review of U.S. Pat. No. 7,391,791 dated Mar. 9, 2018, 92 pages.
- Sonos, Inc. v. Implicit, LLC*: Declaration of Roman Chertov in Support of the Inter Partes Review of U.S. Pat. No. 8,942,252 dated Mar. 9, 2018, 81 pages.
- Sonos, Inc. v. Lenbrook Industries Limited et al.*, Defendants' Answer to Plaintiffs Complaint—Exhibit A, filed Oct. 14, 2019, 3 pages.
- Sonos, Inc. v. Lenbrook Industries Limited et al.*, Defendants' Answer to Plaintiffs Complaint—Exhibit C, filed Oct. 14, 2019, 16 pages.
- Sonos, Inc. v. Lenbrook Industries Limited et al.*, Defendants' Answer to Plaintiffs Complaint—Exhibit D, filed Oct. 14, 2019, 36 pages.
- Sonos, Inc. v. Lenbrook Industries Limited et al.*, Defendants' Answer to Plaintiffs Complaint—Exhibit E, filed Oct. 14, 2019, 21 pages.
- Sonos, Inc. v. Lenbrook Industries Limited et al.*, Defendants' Answer to Plaintiffs Complaint, filed Oct. 14, 2019, 66 pages.
- Sonos, Inc. v. Lenbrook Industries Limited et al.*, Defendants' First Amended Answer and Counterclaims to Plaintiff's Complaint, filed Nov. 14, 2019, 66 pages.
- Wired. Total Remote Control, Issue 11.06, Jun. 2003, 2 pages.
- Wireless USB Adapter 11g CPWUA054, CPWUA054/00, CPWUA054/37, User Manual, Version: 1.0, Dec. 2003, 29 pages.
- Yahoo Finance. BridgeCo Successfully Commercializes its BeBoB Application for the Music Industry: Four Manufacturers Demonstrate BeBoB-enabled Products at NAMM 2004. Jan. 16, 2004, 3 pages.
- Yamaha Digital Audio Server, MCX-1000, Owner's Manual, 1996-2002, 148 pages.
- Yamaha MusicCAST Digital Audio Server MCX-1000 Owner's Manual, Copyright 1996-2002, 148 pages.
- Yamaha, MusicCAST: Digital Audio Terminal MCX-A10, Owner's Manual. Jun. 4, 2003, 76 pages.
- Yamaha Personal Receiver RP-U200 Operation Manual ("Operation Manual"), Copyright 1992-1997, 57 pages.
- Zero Configuration networking with Bonjour—YouTube available via <https://www.youtube.com/watch?v=ZhtZJ6EsCXo> 3 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].
- Zeroconf Working Group, Dynamic Configuration of IPv4 Link-Local Addresses, Internet-Draft, Jul. 8, 2004, 62 pages.
- Zeroconf Working Group, Dynamic Configuration of IPv4 Link-Local Addresses, Internet-Draft, Jul. 1, 2004, 60 pages.
- Zeroconf Working Group, Dynamic Configuration of IPv4 Link-Local Addresses, Internet-Draft, Jun. 7, 2004, 62 pages.
- Zeroconf Working Group, Dynamic Configuration of Link-Local IPv4 Addresses, Internet-Draft, Feb. 16, 2004, 60 pages.
- Zeroconf Working Group, Dynamic Configuration of Link-Local IPv4 Addresses, Internet-Draft, Mar. 31, 2004, 60 pages.
- Olenick, Doug. Twice, Networked MP3 Player Lineup Bows from cd30, Jan. 9, 2003, 2 pages.
- Omnifi A Simple Media Experience. DMSI User Manual, Jul. 2003 36 pages.
- Omnifi DMSI Wi-Fi Media Receiver p. 2, Sound & Vision, Copyright 2020, 7 pages.
- Omnifi DMSI Wi-Fi Media Receiver p. 3, Sound & Vision, Copyright 2020, 5 pages.
- Parrot—All Products—Bluetooth Hands Free Car Kits, Oct. 21, 2008, 3 pages.
- Parrot DS1120—Wireless Hi-Fi Stereo Sound System, Nov. 22, 2008, 3 pages.
- Pinnacle ShowCenter. Pinnacle Systems, Mar. 2005, 132 pages.
- Pohlmann, Ken. Omnifi DMSI Wi-Fi Media Receiver. Sound & Vision, Oct. 20, 2003, 7 pages.
- Publishing Network Services. Apple Developer Connection. Rendezvous Network Services: Publishing Network Services, Nov. 12, 2002, 6 pages.
- Rendezvous Network Services: Resolving and Using Network Services. Apple Developer Connection, Nov. 12, 2002, 5 pages.
- Rendezvous Network Services: About Rendezvous. Apple Developer Connection, Nov. 12, 2002, 5 pages.
- Rocketfish. Digital Wireless Speakers. RF-WS01/WS01-WNVS02 User Guide, 2008, 28 pages.
- Roku SoundBridge Network Music Player User Guide v2.5, 2006, 40 pages.
- Rose, B., Home Networks: A Standards Perspective. In-Home Networking, IEEE Communications Magazine, Dec. 2001, 8 pages.
- Schertel, Barry. Griffin Evolve Wireless iPod Speakers, Feb. 18, 2008, 4 pages.
- Shannon, Victoria. The New York Times, Company supports Apple: Philips sets up a 'Rendezvous', Sep. 11, 2002, 2 pages.
- Sieborger, D. R., Multiprotocol Control of Networked Home Entertainment Devices, Feb. 2004, 131 pages.
- SMC EZ-Stream Universal Wireless Multimedia Receiver—NextUp, Dec. 5, 2003, 4 pages.
- SMC Network. SMCWMR-AG—EZ-Stream Universal Wireless Multimedia Receiver, Dec. 3, 2003, 2 pages.
- SMC Networks Consumer Site. About SMC: Press Release Details, Feb. 21, 2004, 2 pages.
- SMC Networks Consumer Site. Products: Home Entertainment Networking, Dec. 10, 2003, 1 page.
- SMC Networks Consumer Site. Products: Home Entertainment Networking, Feb. 7, 2004, 1 page.
- SMC Networks Consumer Site. Support: Support Center Downloads, Feb. 7, 2004, 1 page.
- SMC Networks EZ-Stream Universal 2.4GHz/5GHz Wireless Multimedia Receiver. SMCWMR-AG Users Manual, 60 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].
- SMC Networks. SMCWAA-B EZ-Stream 2.4GHz Wireless Audio Adapter. User Guide, 2004, 51 pages.
- SMC Networks. SMCWMR-AG EZ-Stream Universal Wireless Multimedia Receiver. User Guide, 2003, 43 pages.
- SMC-GT1255FTX-SC EZ Card. SMC Networks: What's New, Feb. 5, 2004, 7 pages.
- Sony. Home Theatre System. HT-DDW790 and HT-DDW685 Operating Instructions, 2007, 64 pages.
- Sony Shows Off Range of Home LANs, Dec. 15, 2000, 1 page.
- Sound Blaster, Wireless Music. User's Guide: Creative Sound Blaster Wireless Music Version 1.0, Aug. 2003, 66 pages.
- Space.com. Tech Today: News about the latest gizmos and gadgets conveniently available on Earth, Feb. 14, 2004, 2 pages.
- Steve Jobs introduces AirPort Express All Things D2 (2004)—YouTube available via [https://www.youtube.com/watch?v=hq5\\_P90pQoQ](https://www.youtube.com/watch?v=hq5_P90pQoQ) 3 pages, [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].
- Technology. cd30 is developing products which implement NAVOS, allowing consumers to get better utility out of their home media libraries. Nov. 21, 2003, 1 page.



## US 10,848,885 B2

Page 26

(56)

## References Cited

## OTHER PUBLICATIONS

Thaler et al. Scalability and Synchronization in IEEE 1394-Based Content-Creation Networks. Audio Engineering Society Convention Paper 5461, Sep. 21-24, 2001, 16 pages.

Tom's Hardware Guide: Nachrichten. Nachrichten vom Jan. 10, 2003, 3 pages. [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Trask, Simon. NewsRoom, Pro Sound News Europe, Bluetooth to drive wireless speakers, vol. 18; Issue 6, Jun. 1, 2003, 2 pages.

Tsai et al. SIM-based Subscriber Authentication for Wireless Local Area Networks, 2003, 6 pages.

United States Patent and Trademark Office, U.S. Appl. No. 60/379,313, filed May 9, 2002, entitled "Audio Network Distribution System," 49 pages.

United States Patent and Trademark Office, U.S. Appl. No. 60/379,313, filed May 9, 2002, entitled "Audio Network Distribution System," 50 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Urien et al. EAP-TLS Smartcards, from Dream to Reality, 4th Workshop on Applications and Services in Wireless Networks, Aug. 9, 2004, 19 pages.

Valtchev et al. In Home Networking, Service Gateway Architecture for a Smart Home, Apr. 2002, 7 pages.

Wi-Fi Alliance. Wi-Fi Protected Setup Specification, Version 1.0h, Dec. 2006, 110 pages.

Wildstrom, Stephen. At CES, Cool Tech Still Rules. BusinessWeek Online, Jan. 13, 2003, 3 pages.

Wilkins, N., SMC SMCWMR-AG EZ-Stream (wireless) review. CNET, Feb. 8, 2004, 3 pages.

Wilkins, N., SMC SMCWMR-AG EZ-Stream (wireless) review. CNET, Feb. 8, 2004, 5 pages.

Williams, A. Zero Configuration Networking. Requirements for Automatic Configuration of IP Hosts, Sep. 19, 2002, 19 pages.

Williams, Stephen. NewsRoom, Going Wireless, Oct. 21, 2003, 2 pages.

Williams, Stephen. NewsRoom, Newsday, As Wireless Evolves, Compatibility is Key, Jul. 21, 2003, 3 pages.

Windows XP: The Complete Reference—Chapter 19 Working with Sound, 6 pages [produced by Google in Inv. No. 337-TA-1191 on May 6, 2020].

Amazon: Philips MCW770 WiFi Wireless PC Link AM/FM 5-CD Microsystem (Discontinued by Manufacturer): Home Audio & Theater, 5 pages [online]. [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL: <https://www.amazon.com/gp/product/B000278KLC>.

Ashcroft et al. P4 Protocol Specification vo.2. Apr. 6, 2002, 11 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <https://snarfed.org/p4protocol>.

AudioPoint from Home Director. Play Digital Music on Your Conventional Stereo System, 2002, 2 pages.

AudioPoint, Welcome to the coolest way to listen to digital music over your conventional stereo equipment, Home Director HD00B02, 2002, 2 pages.

Barix Download Exstreamer Software. Accessed via WayBack Machine, Apr. 6, 2003. <http://www.barix.com/estreamer/softwaradownload.html>. 2 pages.

Barix. Exstreamer Datasheet. Accessed via WayBack Machine, Apr. 2, 2003. <http://www.barix.com/exstreamer/>, 1 page.

Barret, Ryan. P4 Proposal: CS194 Project Proposal. Toward an Application-Independent Distributed Network Platform. Apr. 9, 2002, 4 pages [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <https://snarfed.org/p4proposal>.

Barrett, Ryan. (no title) Blog on P4Sync network and code, 1 page [online], [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <https://snarfed.org/p4>.

Bose. The Bose Lifestyle 50 System. Owner's Guide, Oct. 17, 2001, 55 pages.

Canadian Patent Office, Canadian Office Action dated Jan. 27, 2020, issued in connection with Canadian Application No. 3032479, 4 pages.

Chinese Patent Office, Third Office Action and Translation dated Dec. 30, 2019, issued in connection with Chinese Application No. 201610804134.8, 10 pages.

C-Media Electronics Inc. CMI8768/8768+ Advanced Driver Software Architecture. User Manual, Revision: 1.0, May 25, 2004, 29 pages.

C-Media XeaR 3D Sound Solution. CMI8738 416-Channel PCI Audio Single Chip. User Manual, Rev. 2.1, May 21, 2002, 44 pages. Connected Planet. Using PC Link. Streamium PC Link by Philips. Models MC-i200/250, SL300i, SL400i, MX6000i, last modified Aug. 5, 2004, 2 pages.

Creating the Future of Home Entertainment Today. NetStreams Product Catalog 2003/2004, 20 pages.

Crest Audio Pro Series 8001 Power Amplifier. V. 2.2 Mar. 25, 1997, 2 pages.

Davies, Chris. Sony Ericsson MS500 Bluetooth Splashproof Speaker. <http://www.slashgear.com/sony-ericsson-ms500-bluetooth-splashproof>. Mar. 17, 2009, 2 pages.

Denon AVR-3805 A/V Surround Receiver. Datasheet, last modified Mar. 1, 2004, 2 pages.

Digram. EtherSound ES8in/8out Ethernet Audio Bridges. Easy and Cost-Effective Audio Distribution, Nov. 2002, 4 pages.

DP-0206 TOA Digital Signal Processor. TOA Corporation, 2001, 4 pages.

Exstreamer. Network MP3 player for digital audio streaming in a consumer, home installation and commercial applications. Barix Think Further. Sep. 2002, 2 pages.

Exstreamer. The Exstreamer Instruction Manual. Barix Think Further Version 1.5, Oct. 2002, 21 pages.

Exstreamer. The Exstreamer Technical Description: Version 1.5. Barix Think Further. Oct. 2002, 36 pages.

Final Office Action dated Feb. 12, 2020, issued in connection with U.S. Appl. No. 15/130,919, filed Apr. 15, 2016, 15 pages.

Final Office Action dated Apr. 20, 2020, issued in connection with U.S. Appl. No. 15/405,931, filed Jan. 13, 2017, 8 pages.

FireBall Digital Music Manager E-40 and E-120. Meet FireBall. The Industry's choice for managing your entire music collection. Datasheet. 2003, 2 pages.

Fireball E2 User's Manual. Escient. Gracenote cddb. 2000-2004, 106 pages.

Setting to know Logitech Squeezebox Touch Wi-Fi Music Player. Features Guide, 2010, 36 pages.

Google's Answer to Complaint and Counterclaims filed with United States District Court Central District of California, Western Division on Mar. 2, 2020, 50 pages.

Google's Counterclaims to Sonos's Complaint filed with United States District Court Central District of California, Western Division on 11 Mar. 2020, 13 pages.

HP Deskjet 5850 User Guide, copyright 2003, 217 pages.

LA Audio ZX135E 6 Zone Expander. Pro Audio Design Pro. Inc. <https://www.proaudiodesign.com/products/la-audio-zx135e-6-zone-expander>, accessed Mar. 26, 2020, 6 pages.

Microsoft Windows XP Student Edition Complete. University of Salford. Custom Guide Learn on Demand, 2004, 369 pages.

Model MRC88 Eight Zone—Eight Source AudioNideo Controller/Amplifier System, Xantech Corporation, 2003, 102 pages.

Multi-Zone Control Systems. ZR-8630AV MultiZone Receiver. Niles. <http://www.ampersandcom.com/zr8630av.html> accessed Mar. 26, 2020, 5 pages.

Musica 5000 Series. Multi-Room Audio System, NetStreams, 2005, 7 pages.

Musica MUR2E Network Interface. NetStreams Creating the future of home entertainment—today, 2004, 2 pages.

Musica MUR2EM Network Interface. NetStreams the IP Based Distributed Entertainment Company, 2005, 2 pages.

NetStreams Musica MU5066. Multi-Room Audio System. Installation and User's Guide, 2005, 44 pages.

NetStreams Musica. NS-MU4602 Audio Distribution System, Integration & Design Guide. The IP-Based Audio Distribution Company, 2004, 22 pages.

Non-Final Office Action dated Mar. 11, 2020, issued in connection with U.S. Appl. No. 16/773,966, filed Jan. 27, 2020, 34 pages.

**US 10,848,885 B2**

Page 27

---

(56)

**References Cited**

**OTHER PUBLICATIONS**

Non-Final Office Action dated Apr. 13, 2020, issued in connection with U.S. Appl. No. 16/297,991, filed Mar. 11, 2019, 16 pages.

Non-Final Office Action dated Feb. 13, 2020, issued in connection with U.S. Appl. No. 16/422,160, filed May 24, 2019, 8 pages.

Notice of Allowance dated Nov. 27, 2019, issued in connection with U.S. Appl. No. 16/128,443, filed Sep. 11, 2018, 5 pages.

P4 0.3.1 software/source code available via link ("Download P4 0.3.1.") 1 page [online]. [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <http://snarfed.org/p4>.

p4sync/player.cpp. GitHub. Copyright 2005, 4 pages [online], [retrieved on Mar. 26, 2020]. Retrieved from the Internet URL: <http://github.com/snarfed/p4sync/blob/master/player.cpp>.

Parrot DS1120 User Guide, English. Retrieved on Mar. 26, 2020, 11 pages.

Parrot DS1120 User Manual, 2007, 22 pages.

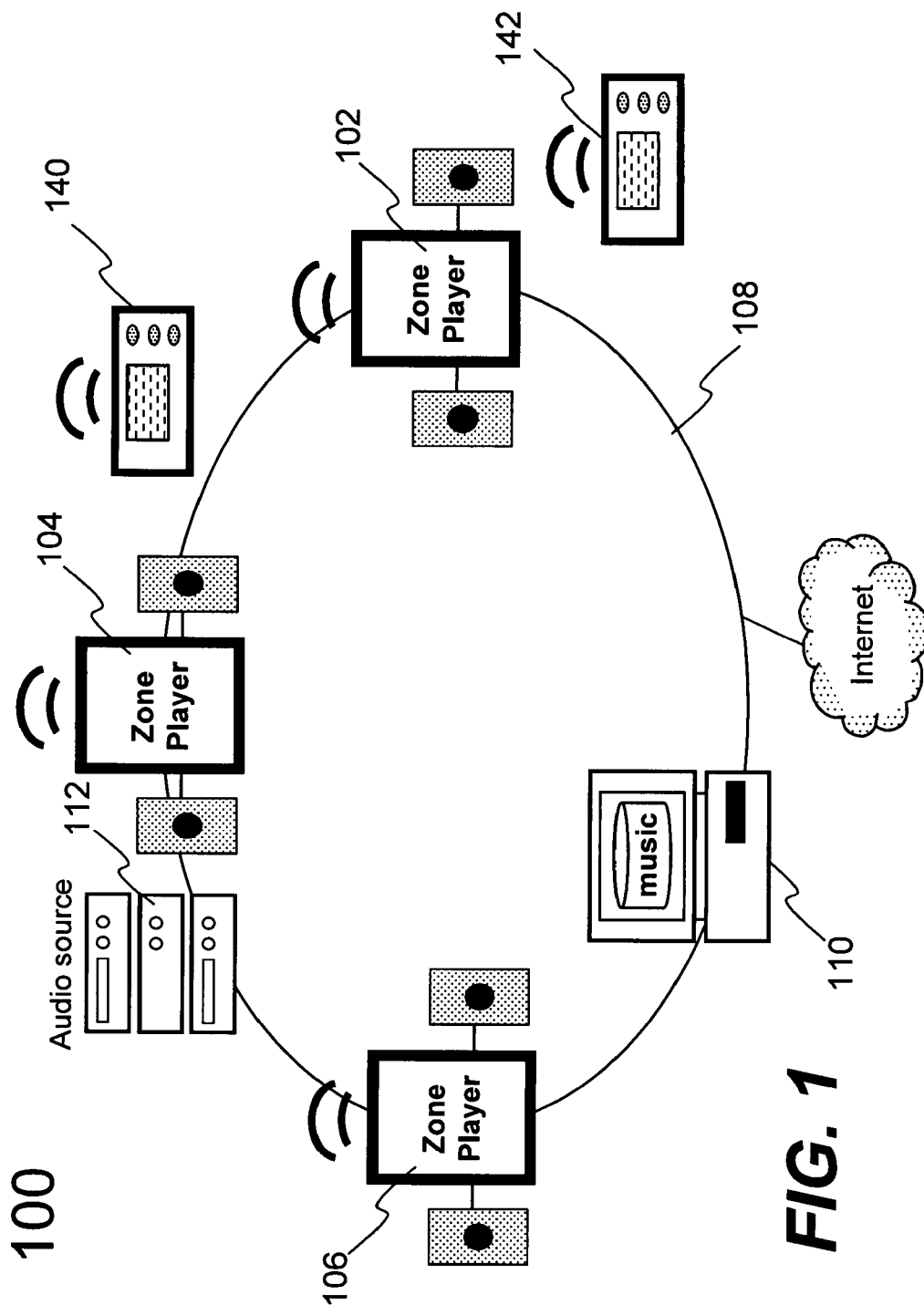
Philips. Installation CD Content, software/ source code available via zip file ("Installation CD Content") published Sep. 15, 2004, 3 pages [online], [retrieved on Feb. 24, 2020]. Retrieved from the Internet URL: [https://www.usa.philips.com/c-p/MCW770\\_37/-/support](https://www.usa.philips.com/c-p/MCW770_37/-/support).

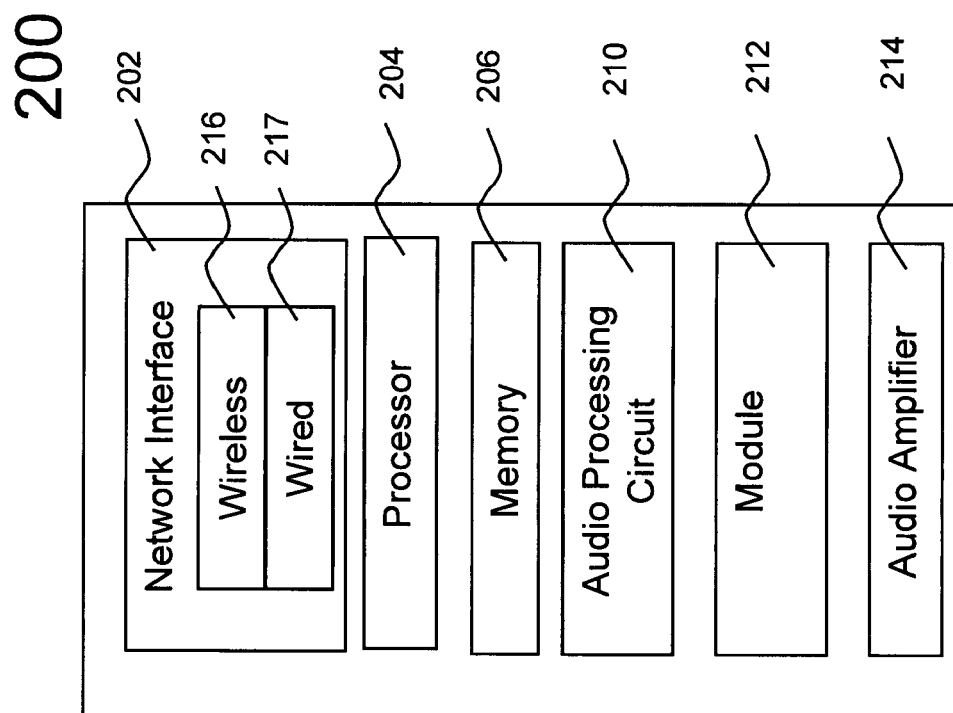
Final Office Action dated Aug. 4, 2020, issued in connection with U.S. Appl. No. 16/422,160, filed May 24, 2019, 12 pages.

Non-Final Office Action dated Aug. 6, 2020, issued in connection with U.S. Appl. No. 15/130,919, filed Apr. 15, 2016, 17 pages.

\* cited by examiner







**FIG. 2A**

240

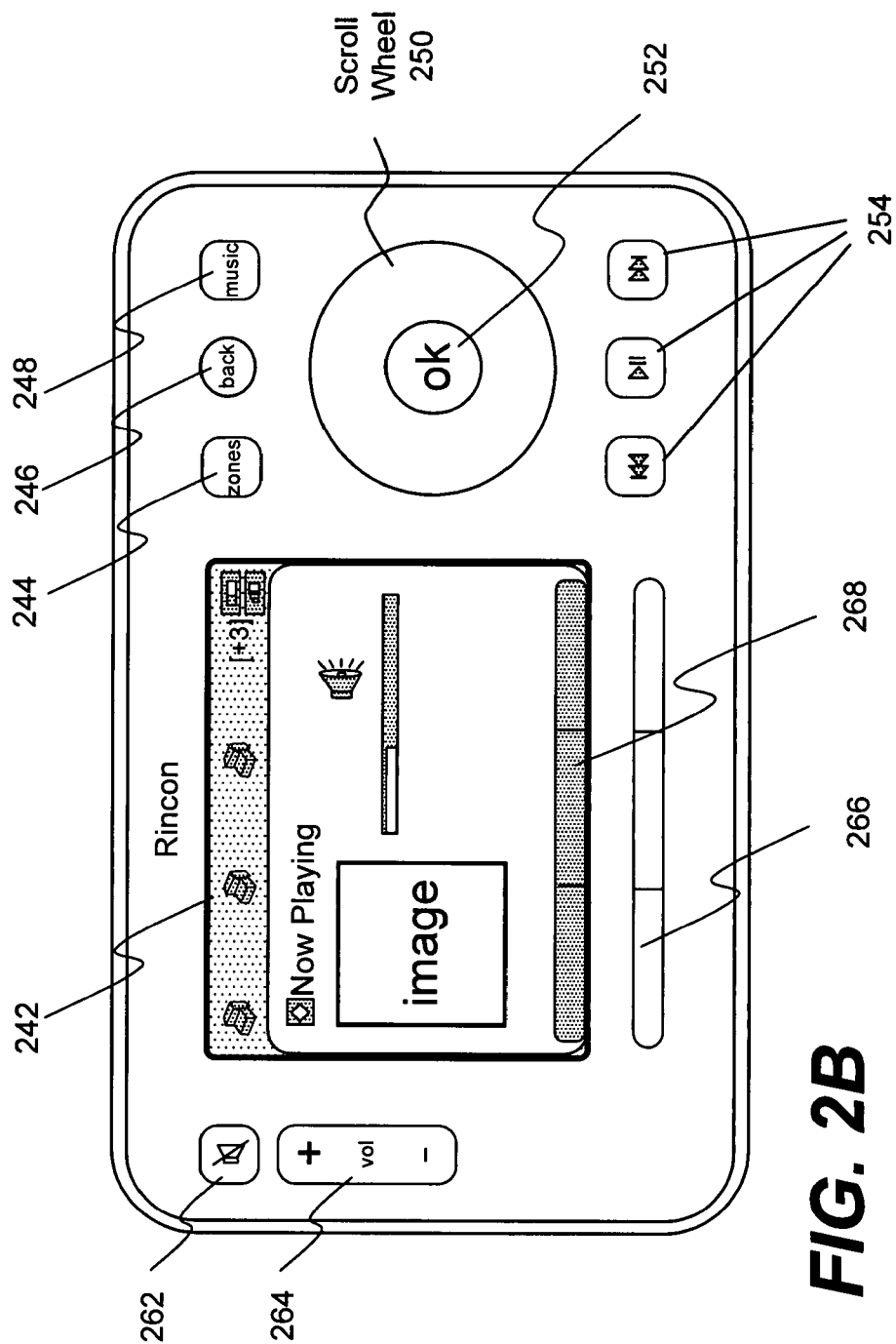
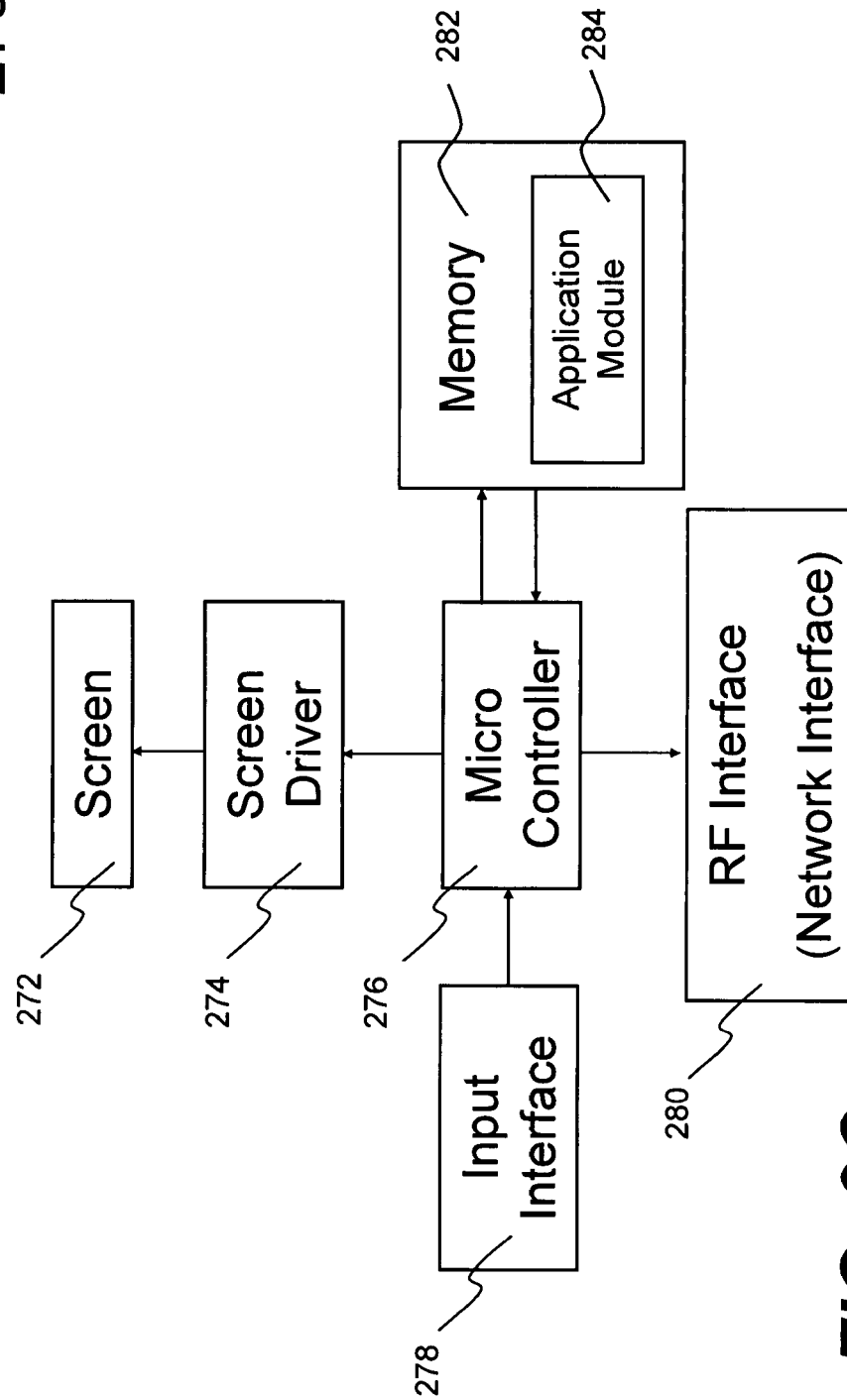
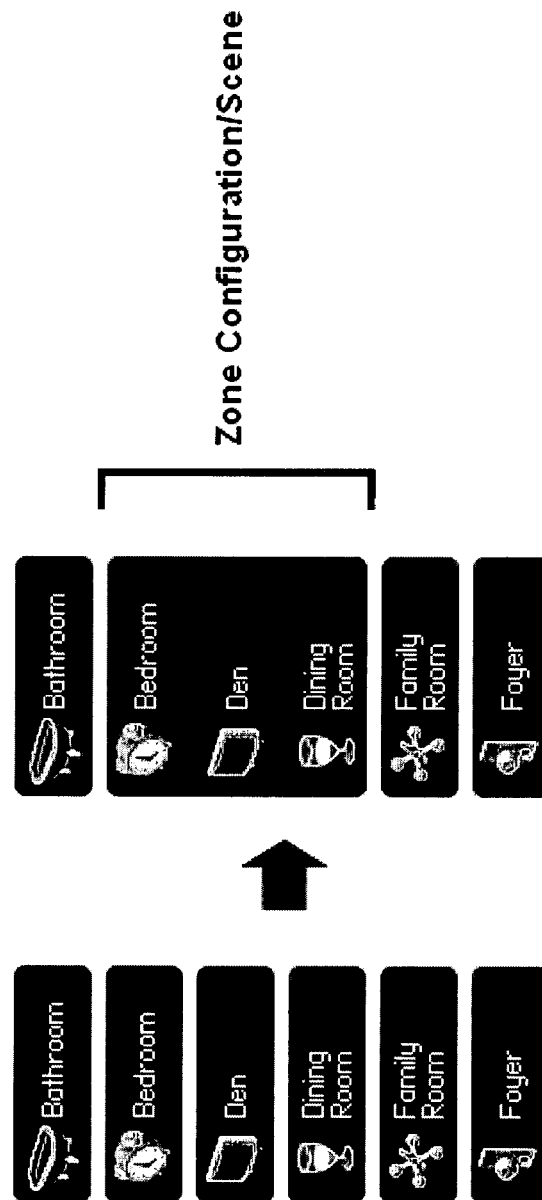


FIG. 2B

270

**FIG. 2C**





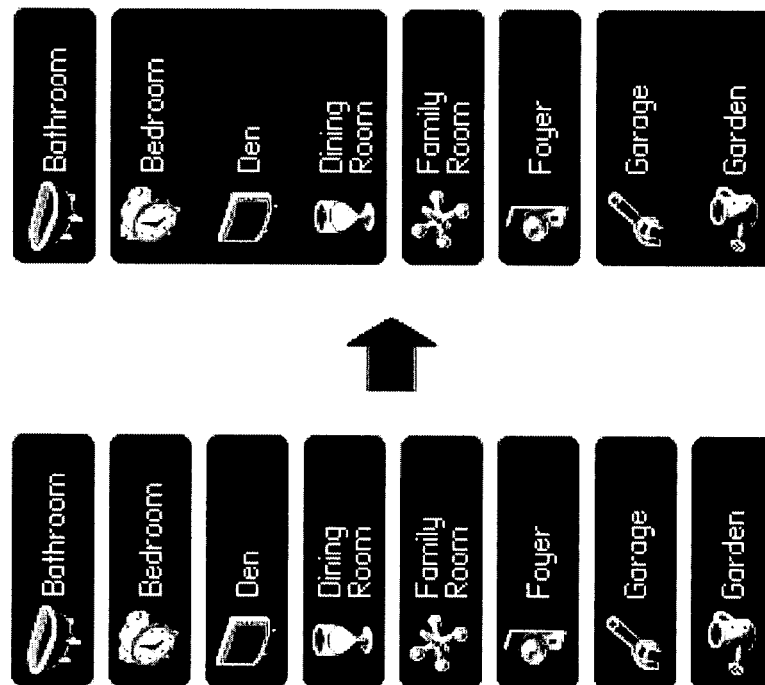
**FIG. 3A**

U.S. Patent

Nov. 24, 2020

Sheet 6 of 11

US 10,848,885 B2



**FIG. 3B**

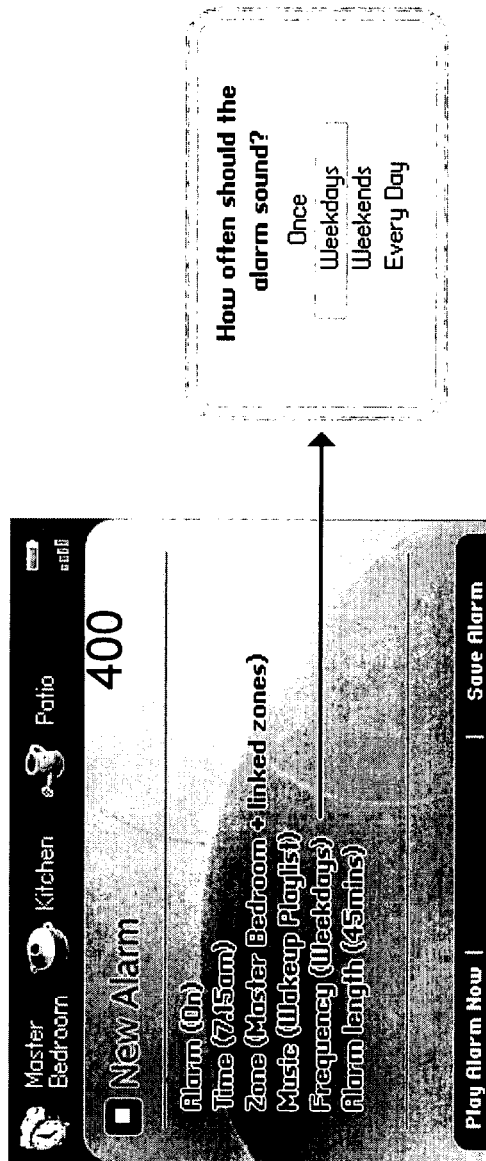
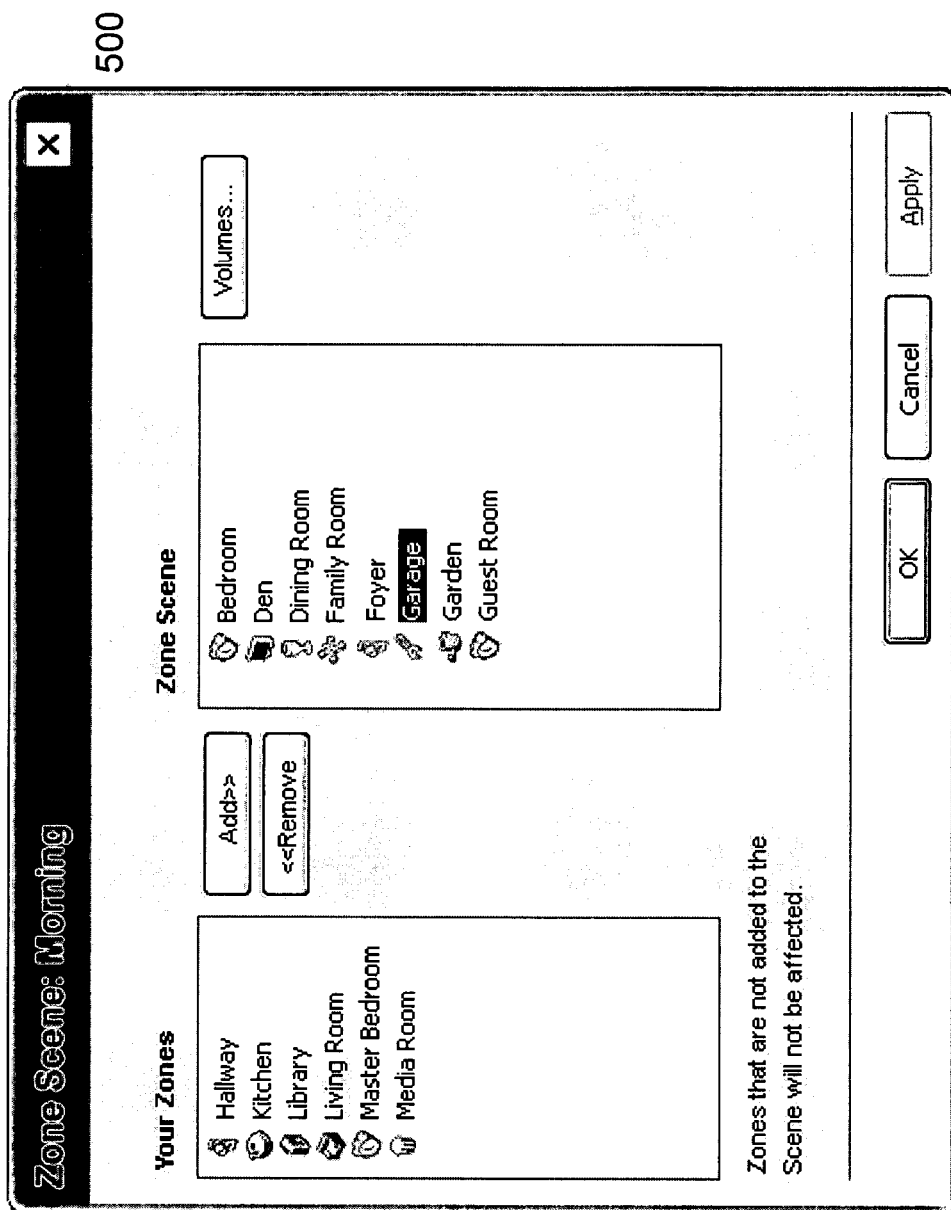
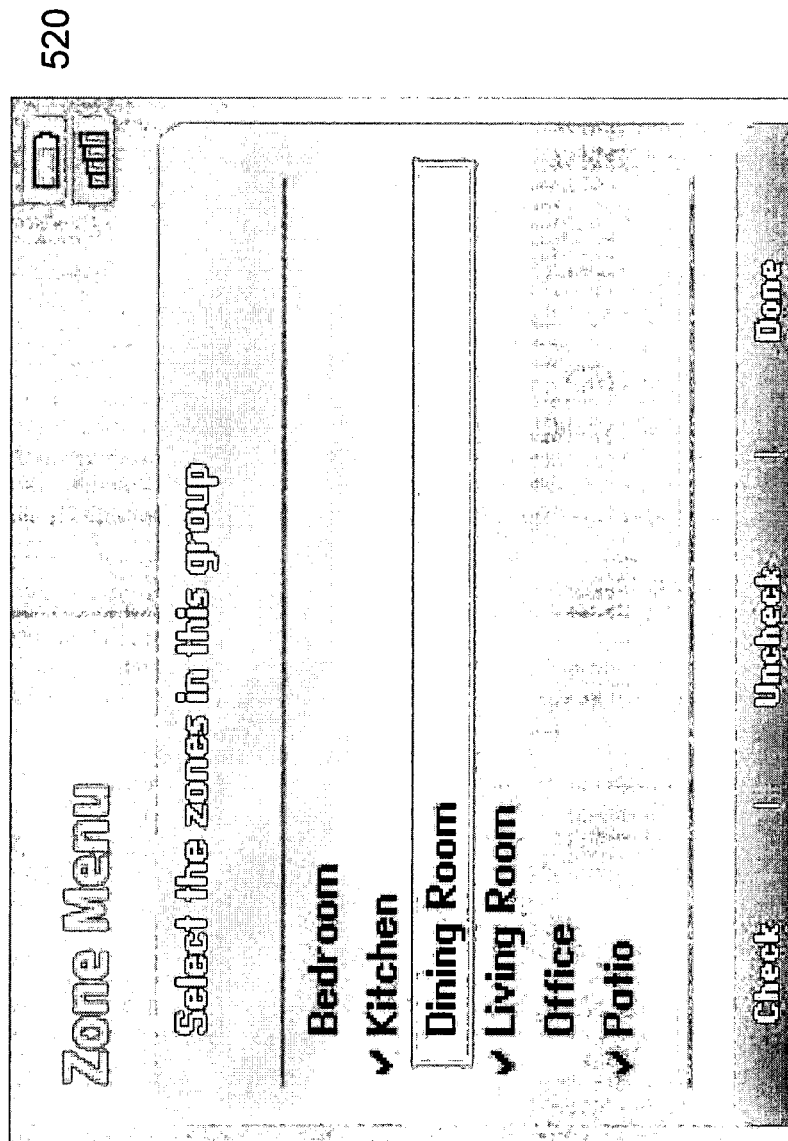


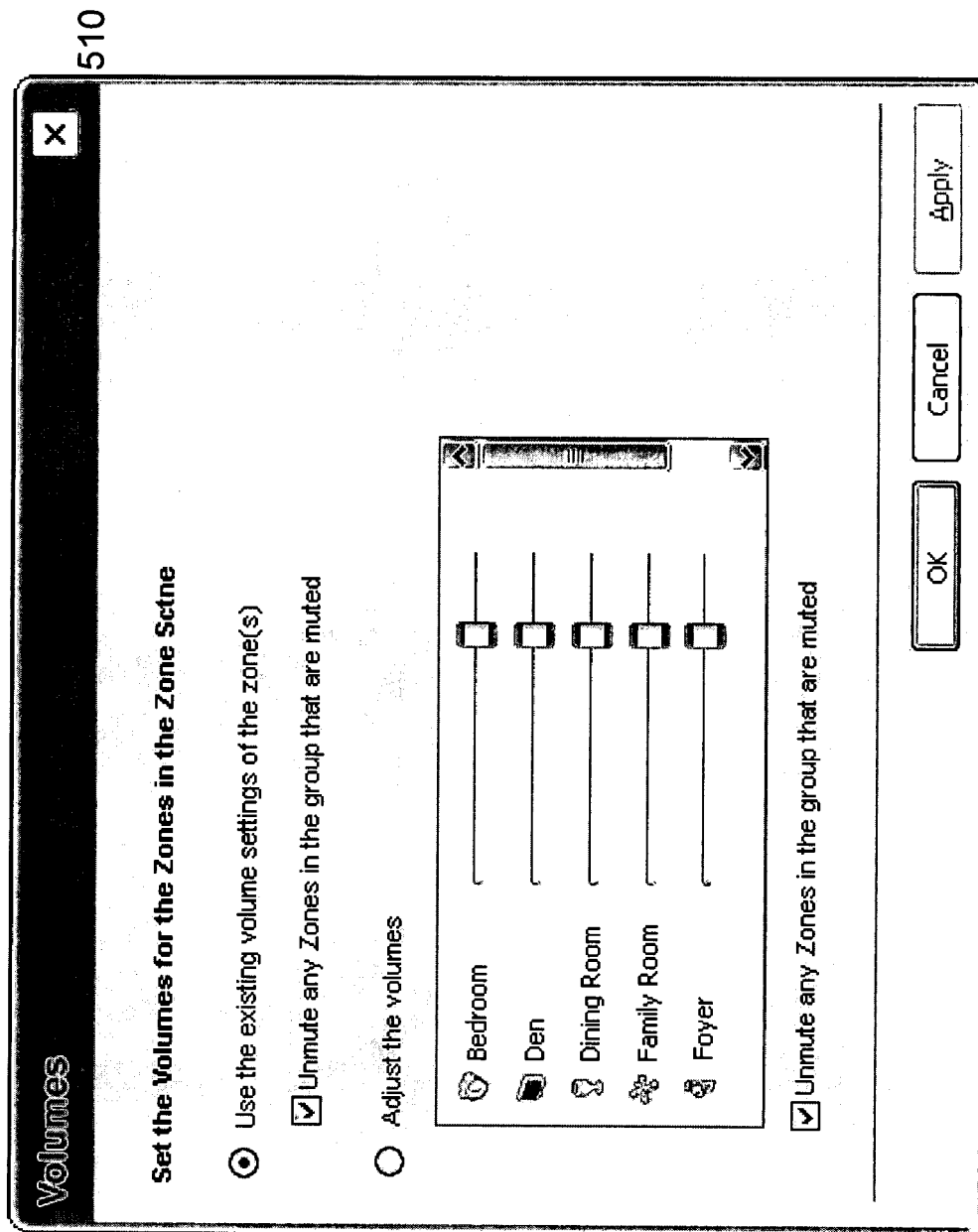
FIG. 4

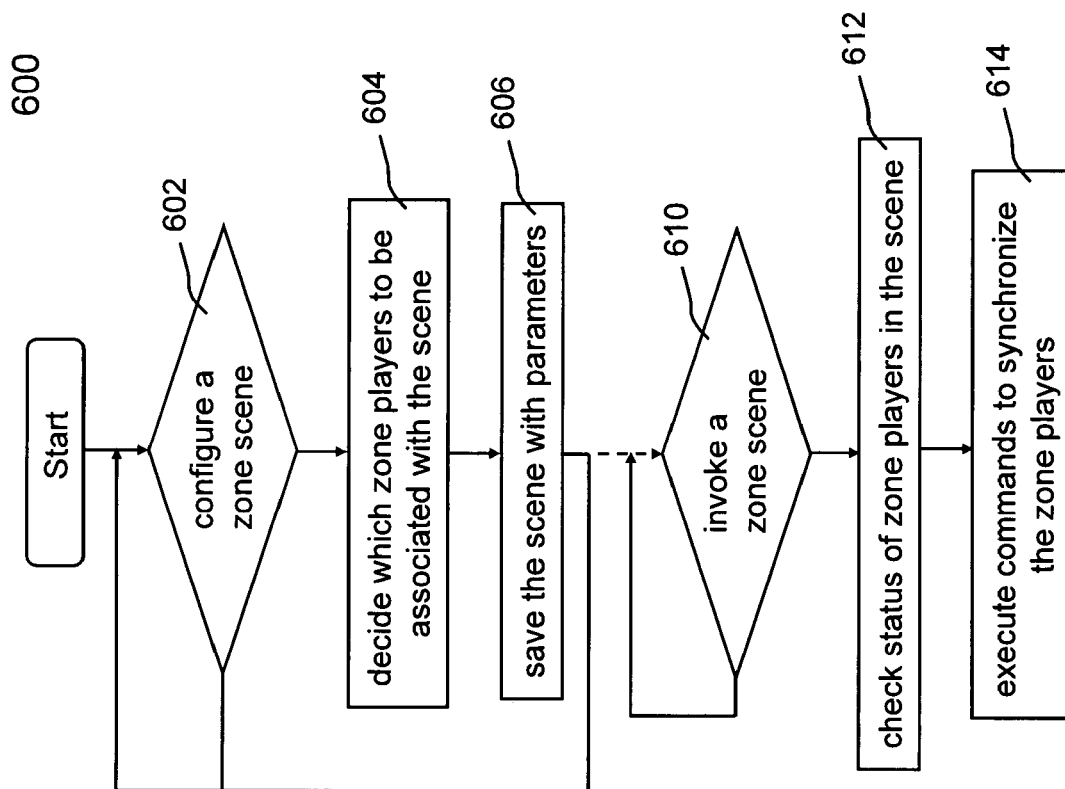
**FIG. 5A**





**FIG. 5B**

**FIG. 5C**

**FIG. 6**

US 10,848,885 B2

1

**ZONE SCENE MANAGEMENT****CROSS REFERENCE TO RELATED APPLICATIONS**

This application is a continuation of and claims priority to U.S. patent application Ser. No. 15/130,919, filed on Apr. 15, 2016, entitled "ZONE SCENE ACTIVATION," which is a continuation of U.S. patent application Ser. No. 14/465,457, filed on Aug. 21, 2014, entitled "METHOD AND APPARATUS FOR UPDATING ZONE CONFIGURATIONS IN A MULTI-ZONE SYSTEM," which is a continuation of U.S. patent application Ser. No. 13/896,829, filed on May 17, 2013, entitled "METHOD AND APPARATUS FOR UPDATING ZONE CONFIGURATIONS IN A MULTI-ZONE SYSTEM," which is a continuation of U.S. patent application Ser. No. 11/853,790, filed Sep. 11, 2007, entitled "CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM," which claims priority to U.S. Provisional Application No. 60/825,407 filed on Sep. 12, 2006, entitled "CONTROLLING AND MANIPULATING GROUPINGS IN A MULTI-ZONE MEDIA SYSTEM," each of which is hereby incorporated by reference in its entirety for all purposes.

**BACKGROUND OF THE INVENTION****Field of the Invention**

The invention is generally related to the area of consumer electronics and human-computer interaction. In particular, the invention is related to method and apparatus for controlling or manipulating a plurality of multimedia players in a multi-zone system.

An enduring passion for quality audio reproduction or system is continuing to drive demands from users. One of the demands includes an audio system in a house in which, for example, one could grill to classic rock on a patio while another one may cook up his/her own music selections in a kitchen. This is all at the same time while a teenager catches a ballgame in a family room, and another one blasts pop in a bedroom. And the best part of such audio system is that each family member does not need his or her own stereo system—one system gives everyone access to all the music sources.

Currently, one of the systems that can meet part of such demand is a conventional multi-zone audio system that usually includes a number of audio players. Each of the audio players has its own amplifier(s) and a set of speakers and typically installed in one place (e.g., a room). In order to play an audio source at one location, the audio source must be provided locally or from a centralized location. When the audio source is provided locally, the multi-zone audio system functions as a collection of many stereo systems, making source sharing difficult. When the audio source is provided centrally, the centralized location may include a juke box, many compact discs, an AM or FM radio, tapes, or others. To send an audio source to an audio player demanding such source, a cross-bar type of device is used to prevent the audio source from going to other audio players that may be playing other audio sources.

In order to achieve playing different audio sources in different audio players, the traditional multi-zone audio system is generally either hard-wired or controlled by a pre-configured and pre-programmed controller. While the pre-programmed configuration may be satisfactory in one situation, it may not be suitable for another situation. For

2

example, a person would like to listen to broadcast news from his/her favorite radio station in a bedroom, a bathroom and a den while preparing to go to work in the morning. The same person may wish to listen in the den and the living room to music from a compact disc in the evening. In order to satisfy such requirements, two groups of audio players must be established. In the morning, the audio players in the bedroom, the bathroom and the den need to be grouped for the broadcast news. In the evening, the audio players in the den and the living room are grouped for the music. Over the weekend, the audio players in the den, the living room, and a kitchen are grouped for party music. Because the morning group, the evening group and the weekend group contain the den, it can be difficult for the traditional system to accommodate the requirement of dynamically managing the ad hoc creation and deletion of groups.

There is a need for dynamic control of the audio players as a group. With a minimum manipulation, the audio players may be readily grouped. In a traditional multi-zone audio system, the audio players have to be adjusted one at a time, resulting in an inconvenient and non-homogenous audio environment. Further, there is a need to individually or systematically adjust the audio volume of the audio players.

**SUMMARY OF THE INVENTION**

This section is for the purpose of summarizing some aspects of the present invention and to briefly introduce some preferred embodiments. Simplifications or omissions in this section as well as in the abstract or the title of this description may be made to avoid obscuring the purpose of this section, the abstract and the title. Such simplifications or omissions are not intended to limit the scope of the present invention.

In general, the present invention pertains to controlling a plurality of multimedia players, or simply players, in groups. According to one aspect of the present invention, a mechanism is provided to allow a user to group some of the players according to a theme or scene, where each of the players is located in a zone. When the scene is activated, the players in the scene react in a synchronized manner. For example, the players in the scene are all caused to play an audio source or music in a playlist, wherein the audio source may be located anywhere on a network.

According to another aspect of the present invention, the scene may be activated at any time or a specific time. A user may activate the scene at any time so that only some selected zones in an entertainment system facilitate a playback of an audio source. When the scene is activated at a specific time, the scene may be used as an alarm or buzzer.

According to still another aspect of the present invention, a controlling device (also referred to herein as controller) is provided to facilitate a user to select any of the players in the system to form respective groups each of which is set up per a scene. Although various scenes may be saved in any of the members in a group, commands are preferably sent from the controller to the rest of the members when one of the scenes is executed. Depending on implementation, the commands include parameters pertaining to identifiers of the players, volumes settings, audio source and etc.

According to yet another aspect of the present invention, a configurable module is implemented in the controlling device that provides interactive graphic user interface for forming, managing and controlling groups in the system, de-grouping a group or adjusting audio volume of individual players or a group of players.



US 10,848,885 B2

3

The present invention may be implemented in many forms including software, hardware or a combination of both. According to one embodiment, the present invention is directed to a method for groupings in a multi-zone media system, the method comprises providing a mechanism to allow a user to determine which players in the system to be associated with a theme representing a group; and configuring the theme with parameters pertaining to the players, wherein the theme is activated at anytime or a specific time so that the players react in a synchronized manner. The players in a scene are synchronized to play a multimedia file when the scene is activated.

According to another embodiment, the present invention is directed to an entertainment system for grouping players, the system comprises: a plurality of players, each located in one zone; and a controller providing a mechanism to allow a user to select which of the players to be associated with a theme representing a group; and configure the theme with parameters pertaining to the selected players, wherein the theme is activated at anytime or a specific time so that the selected players react in a synchronized manner. As a result, the selected players are synchronized to play a multimedia that is in a digital format and retrieved from a source over a network.

One of the objects, features, and advantages of the present invention is to remotely control a plurality of multimedia players in a multi-zone system, playing and controlling the audio source synchronously if the players are grouped together, or playing and controlling the audio source individually if the players are disassociated with each other.

Other objects, features, and advantages of the present invention will become apparent upon examining the following detailed description of an embodiment thereof, taken in conjunction with the attached drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. 1 shows an exemplary configuration in which the present invention may be practiced;

FIG. 2A shows an exemplary functional block diagram of a player in accordance with the present invention;

FIG. 2B shows an example of a controller that may be used to remotely control one of more players of FIG. 2A;

FIG. 2C shows an exemplary internal functional block diagram of a controller in accordance with one embodiment of the present invention;

FIG. 3A provides an illustration of one zone scene, where the left column shows the starting zone grouping—all zones are separate, the column on the right shows the effects of grouping the zones to make a group of 3 zones named after “Morning”;

FIG. 3B shows that a user defines multiple groups to be gathered at the same time;

FIG. 4 shows an exemplary user interface that may be displayed on a controller or a computer of FIG. 1;

FIG. 5A shows a user interface to allow a user to form a scene;

FIG. 5B shows another user interface 520 to allow a user to form a scene;

FIG. 5C shows a user interface to allow a user to adjust a volume level of the zone players in a zone scene individually or collectively;

4

FIG. 6 shows a flowchart or process of providing a player theme or a zone scene for a plurality of players, where one or more of the players are placed in a zone; and

FIG. 7 shows an example user interface for invoking a zone scene; and

FIG. 8 shows another example user interface for invoking a zone scene.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The detailed description of the invention is presented largely in terms of procedures in terms of procedures, steps, logic blocks, processing, and other symbolic representations that directly or indirectly resemble the operations of data processing devices coupled to networks. These process descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art. Numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will become obvious to those skilled in the art that the present invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and circuitry have not been described in detail to avoid unnecessarily obscuring aspects of the present invention.

Reference herein to “one embodiment” or “an embodiment” means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of the phrase “in one embodiment” in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Further, the order of blocks in process flowcharts or diagrams representing one or more embodiments of the invention do not inherently indicate any particular order nor imply any limitations in the invention.

Referring now to the drawings, in which like numerals refer to like parts throughout the several views. FIG. 1 shows an exemplary configuration 100 in which the present invention may be practiced. The configuration may represent, but not be limited to, a part of a residential home, a business building or a complex with multiple zones. There are a number of multimedia players of which three examples 102, 104 and 106 are shown as audio devices. Each of the audio devices may be installed or provided in one particular area or zone and hence referred to as a zone player herein.

As used herein, unless explicitly stated otherwise, an audio source or audio sources are in digital format and can be transported or streamed over a data network. To facilitate the understanding of the present invention, it is assumed that the configuration 100 represents a home. Thus, the zone player 102 and 104 may be located in two of the bedrooms respectively while the zone player 106 may be installed in a living room. All of the zone players 102, 104 and 106 are coupled directly or indirectly to a data network 108. In addition, a computing device 110 is shown to be coupled on the network 108. In reality, any other devices such as a home gateway device, a storage device, or an MP3 player may be coupled to the network 108 as well.

The network 108 may be a wired network, a wireless network or a combination of both. In one example, all devices including the zone players 102, 104 and 106 are coupled to the network 108 by wireless means based on an industry standard such as IEEE 802.11. In yet another example, all devices including the zone players 102, 104 and

US 10,848,885 B2

5

**106** are part of a local area network that communicates with a wide area network (e.g., the Internet).

Many devices on the network **108** are configured to download and store audio sources. For example, the computing device **110** can download audio sources from the Internet and store the downloaded sources locally for sharing with other devices on the Internet or the network **108**. The computing device **110** or any of the zone players can also be configured to receive streaming audio. Shown as a stereo system, the device **112** is configured to receive an analog audio source (e.g., from broadcasting) or retrieve a digital audio source (e.g., from a compact disk). The analog audio sources can be converted to digital audio sources. In accordance with the present invention, the audio source may be shared among the devices on the network **108**.

Two or more zone players may be grouped together to form a new zone group. Any combinations of zone players and an existing zone group may be grouped together. In one instance, a new zone group is formed by adding one zone player to another zone player or an existing zone group.

Referring now to FIG. 2A, there is shown an exemplary functional block diagram of a zone player **200** in accordance with the present invention. The zone player **200** includes a network interface **202**, a processor **204**, a memory **206**, an audio processing circuit **210**, a module **212**, and optionally, an audio amplifier **214** that may be internal or external. The network interface **202** facilitates a data flow between a data network (i.e., the data network **108** of FIG. 1) and the zone player **200** and typically executes a special set of rules (i.e., a protocol) to send data back and forth. One of the common protocols used in the Internet is TCP/IP (Transmission Control Protocol/Internet Protocol). In general, a network interface manages the assembling of an audio source or file into smaller packets that are transmitted over the data network or reassembles received packets into the original source or file. In addition, the network interface **202** handles the address part of each packet so that it gets to the right destination or intercepts packets destined for the zone player **200**.

The network interface **202** may include one or both of a wireless interface **216** and a wired interface **217**. The wireless interface **216**, also referred to as a RF interface, provides network interface functions by a wireless means for the zone player **200** to communicate with other devices in accordance with a communication protocol (such as the wireless standard IEEE 802.11a, 802.11b or 802.11g). The wired interface **217** provides network interface functions by a wired means (e.g., an Ethernet cable). In one embodiment, a zone player includes both of the interfaces **216** and **217**, and other zone players include only a RF or wired interface. Thus these other zone players communicate with other devices on a network or retrieve audio sources via the zone player. The processor **204** is configured to control the operation of other parts in the zone player **200**. The memory **206** may be loaded with one or more software modules that can be executed by the processor **204** to achieve desired tasks. According to one aspect of the present invention, a software module implementing one embodiment of the present invention is executed, the processor **204** operates in accordance with the software module in reference to a saved zone group configuration characterizing a zone group created by a user, the zone player **200** is caused to retrieve an audio source from another zone player or a device on the network.

According to one embodiment of the present invention, the memory **206** is used to save one or more saved zone configuration files that may be retrieved for modification at

6

any time. Typically, a saved zone group configuration file is transmitted to a controller (e.g., the controlling device **140** or **142** of FIG. 1, a computer, a portable device, or a TV) when a user operates the controlling device. The zone group configuration provides an interactive user interface so that various manipulations or control of the zone players may be performed.

The audio processing circuit **210** resembles most of the circuitry in an audio playback device and includes one or more digital-to-analog converters (DAC), an audio preprocessing part, an audio enhancement part or a digital signal processor and others. In operation, when an audio source is retrieved via the network interface **202**, the audio source is processed in the audio processing circuit **210** to produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier **214** for playback on speakers. In addition, the audio processing circuit **210** may include necessary circuitry to process analog signals as inputs to produce digital signals for sharing with other devices on a network.

Depending on an exact implementation, the module **212** may be implemented as a combination of hardware and software. In one embodiment, the module **212** is used to save a scene. The audio amplifier **214** is typically an analog circuit that powers the provided analog audio signals to drive one or more speakers.

Referring now to FIG. 2B, there is shown an exemplary controller **240**, which may correspond to the controlling device **140** or **142** of FIG. 1. The controller **240** may be used to facilitate the control of multi-media applications, automation and others in a complex. In particular, the controller **240** is configured to facilitate a selection of a plurality of audio sources available on the network, controlling operations of one or more zone players (e.g., the zone player **200**) through a RF interface corresponding to the RF interface **216** of FIG. 2A. According to one embodiment, the wireless means is based on an industry standard (e.g., infrared, radio, wireless standard IEEE 802.11a, 802.11b or 802.11g). When a particular audio source is being played in the zone player **200**, a picture, if there is any, associated with the audio source may be transmitted from the zone player **200** to the controller **240** for display. In one embodiment, the controller **240** is used to synchronize more than one zone players by grouping the zone players in a group. In another embodiment, the controller **240** is used to control the volume of each of the zone players in a zone group individually or together.

The user interface for the controller **240** includes a screen **242** (e.g., a LCD screen) and a set of functional buttons as follows: a "zones" button **244**, a "back" button **246**, a "music" button **248**, a scroll wheel **250**, "ok" button **252**, a set of transport control buttons **254**, a mute button **262**, a volume up/down button **264**, a set of soft buttons **266** corresponding to the labels **268** displayed on the screen **242**.

The screen **242** displays various screen menus in response to a user's selection. In one embodiment, the "zones" button **244** activates a zone management screen or "Zone Menu", which is described in more details below. The "back" button **246** may lead to different actions depending on the current screen. In one embodiment, the "back" button triggers the current screen display to go back to a previous one. In another embodiment, the "back" button negates the user's erroneous selection. The "music" button **248** activates a music menu, which allows the selection of an audio source (e.g., a song) to be added to a zone player's music queue for playback.

The scroll wheel **250** is used for selecting an item within a list, whenever a list is presented on the screen **242**. When the items in the list are too many to be accommodated in one screen display, a scroll indicator such as a scroll bar or a scroll arrow is displayed beside the list. When the scroll indicator is displayed, a user may rotate the scroll wheel **250** to either choose a displayed item or display a hidden item in the list. The “ok” button **252** is used to confirm the user selection on the screen **242**.

There are three transport buttons **254**, which are used to control the effect of the currently playing song. For example, the functions of the transport buttons may include play/pause and forward/rewind a song, move forward to a next song track, or move backward to a previous track. According to one embodiment, pressing one of the volume control buttons such as the mute button **262** or the volume up/down button **264** activates a volume panel. In addition, there are three soft buttons **266** that can be activated in accordance with the labels **268** on the screen **242**. It can be understood that, in a multi-zone system, there may be multiple audio sources being played respectively in more than one zone players. The music transport functions described herein shall apply selectively to one of the sources when a corresponding one of the zone players or zone groups is selected.

FIG. 2C illustrates an internal functional block diagram of an exemplary controller **270**, which may correspond to the controller **240** of FIG. 2B. The screen **272** on the controller **270** may be a LCD screen. The screen **272** communicates with and is commanded by a screen driver **274** that is controlled by a microcontroller (e.g., a processor) **276**. The memory **282** may be loaded with one or more application modules **284** that can be executed by the microcontroller **276** with or without a user input via the user interface **278** to achieve desired tasks. In one embodiment, an application module is configured to facilitate grouping a number of selected zone players into a zone group and synchronizing the zone players for one audio source. In another embodiment, an application module is configured to control together the audio volumes of the zone players in a zone group. In operation, when the microcontroller **276** executes one of the application modules **284**, the screen driver **274** generates control signals to drive the screen **272** to display an application specific user interface accordingly, more of which will be described below.

The controller **270** includes a network interface **280** referred to as a RF interface **280** that facilitates wireless communication with a zone player via a corresponding RF interface thereof. In one embodiment, the commands such as volume control and audio playback synchronization are sent via the RF interfaces. In another embodiment, a saved zone group configuration is transmitted between a zone player and a controller via the RF interfaces. The controller **270** may control one or more zone players, such as **102**, **104** and **106** of FIG. 1. Nevertheless, there may be more than one controllers, each preferably in a zone (e.g., a room) and configured to control any one and all of the zone players.

In one embodiment, a user creates a zone group including at least two zone players from the controller **240** that sends signals or data to one of the zone players. As all the zone players are coupled on a network, the received signals in one zone player can cause other zone players in the group to be synchronized so that all the zone players in the group playback an identical audio source or a list of identical audio sources in a timely synchronized manner. Similarly, when a user increases the audio volume of the group from the controller, the signals or data of increasing the audio volume

for the group are sent to one of the zone players and causes other zone players in the group to be increased together in volume and in scale.

According to one implementation, an application module is loaded in memory **282** for zone group management. When a predetermined key (e.g. the “zones” button **244**) is activated on the controller **240**, the application module is executed in the microcontroller **276**. The input interface **278** coupled to and controlled by the microcontroller **276** receives inputs from a user. A “Zone Menu” is then displayed on the screen **272**. The user may start grouping zone players into a zone group by activating a “Link Zones” or “Add Zone” soft button, or de-grouping a zone group by activating an “Unlink Zones” or “Drop Zone” button. The detail of the zone group manipulation will be further discussed below.

As described above, the input interface **278** includes a number of function buttons as well as a screen graphical user interface. It should be pointed out that the controller **240** in FIG. 2B is not the only controlling device that may practice the present invention. Other devices that provide the equivalent control functions (e.g., a computing device, a hand-held device) may also be configured to practice the present invention. In the above description, unless otherwise specifically described, it is clear that keys or buttons are generally referred to as either the physical buttons or soft buttons, enabling a user to enter a command or data.

One mechanism for ‘joining’ zone players together for music playback is to link a number of zone players together to form a group. To link a number of zone players together, a user may manually link each zone player or room one after the other. For example, there is a multi-zone system that includes the following zones.

- Bathroom
- Bedroom
- Den
- Dining Room
- Family Room
- Foyer

If the user wishes to link 5 of the 6 zone players using the current mechanism, he/she must start with a single zone and then manually link each zone to that zone. This mechanism may be sometimes quite time consuming. According to one embodiment, a set of zones can be dynamically linked together using one command. Using what is referred to herein as a theme or a zone scene, zones can be configured in a particular scene (e.g., morning, afternoon, or garden), where a predefined zone grouping and setting of attributes for the grouping are automatically effectuated.

For instance, a “Morning” zone scene/configuration command would link the Bedroom, Den and Dining Room together in one action. Without this single command, the user would need to manually and individually link each zone. FIG. 3A provides an illustration of one zone scene, where the left column shows the starting zone grouping—all zones are separate, the column on the right shows the effects of grouping the zones to make a group of 3 zones named after “Morning”.

Expanding this idea further, a Zone Scene can be set to create multiple sets of linked zones. For example, a scene creates 3 separate groups of zones, the downstairs zones would be linked together, the upstairs zones would be linked together in their own group, and the outside zones (in this case the patio) would move into a group of its own.



US 10,848,885 B2

9

In one embodiment as shown in FIG. 3B, a user defines multiple groups to be gathered at the same time. For example: an “Evening Scene” is desired to link the following zones:

Group 1  
Bedroom  
Den  
Dining Room  
Group 2  
Garage  
Garden

where Bathroom, Family Room and Foyer should be separated from any group if they were part of a group before the Zone Scene was invoked.

One important of the features, benefits and objects in the present invention is that that zones do not need to be separated before a zone scene is invoked. In one embodiment, a command is provided and links all zones in one step, if invoked. The command is in a form of a zone scene. After linking the appropriate zones, a zone scene command could apply the following attributes:

Set volumes levels in each zones (each zone can have a different volume)  
Mute/Unmute zones.  
Select and play specific music in the zones.  
Set the play mode of the music (Shuffle, Repeat, Shuffle-repeat)  
Set the music playback equalization of each zone (e.g., bass treble).

A further extension of this embodiment is to trigger a zone scene command as an alarm clock function. For instance the zone scene is set to apply at 8:00 am. It could link appropriate zones automatically, set specific music to play and then stop the music after a defined duration. Although a single zone may be assigned to an alarm, a scene set as an alarm clock provides a synchronized alarm, allowing any zones linked in the scene to play a predefined audio (e.g., a favorable song, a predefined playlist) at a specific time or for a specific duration. If, for any reason, the scheduled music failed to be played (e.g., an empty playlist, no connection to a share, failed UPnP, no Internet connection for an Internet Radio station), a backup buzzer will sound. This buzzer will be a sound file that is stored in a zone player.

FIG. 4 shows an exemplary user interface 400 that may be displayed on a controller 142 or a computer 110 of FIG. 1. The interface 400 shows a list of items that may be set up by a user to cause a scene to function at a specific time. In the embodiment shown in FIG. 4, the list of items includes “Alarm”, “Time”, “Zone”, “Music”, “Frequency” and “Alarm length”. “Alarm” can be set on or off. When “Alarm” is set on, “Time” is a specific time to set off the alarm. “Zone” shows which zone players are being set to play a specified audio at the specific time. “Music” shows what to be played when the specific time arrives. “Frequency” allows the user to define a frequency of the alarm. “Alarm length” defines how long the audio is to be played. It should be noted that the user interface 400 is provided herein to show some of the functions associated with setting up an alarm. Depending on an exact implementation, other functions, such as time zone, daylight savings, time synchronization, and time/date format for display may also be provided without departing from the present invention.

According to one embodiment, each zone player in a scene may be set up for different alarms. For example, a “Morning” scene includes three zone players, each in a bedroom, a den, and a dining room. After selecting the

10

scene, the user may set up an alarm for the scene as whole. As a result, each of the zone players will be activated at a specific time.

FIG. 5A shows a user interface 500 to allow a user to form a scene. The panel on the left shows the available zones in a household. The panel on the right shows the zones that have been selected and be grouped as part of this scene. Depending on an exact implementation of a user interface, Add/Remove buttons may be provided to move zones between the panels, or zones may be dragged along between panels.

FIG. 5B shows another user interface 520 to allow a user to form a scene. The user interface 520 that may be displayed on a controller or a computing device, lists available zones in a system. The list of zones in the user interface 520 includes ALL the zones in the system, including the zones that are already grouped. A checkbox is provide next to each of the zones so that a user may check in the zones to be associated with the scene.

FIG. 5C shows a user interface 510 to allow a user to adjust a volume level of the zone players in a zone scene individually or collectively. As shown in the user interface 510, the ‘Volumes . . .’ button (shown as sliders, other forms are possible) allows the user to affect the volumes of the associated zone players when a zone scene is invoked. In one embodiment, the zone players can be set to retain whatever volume that they currently have when the scene is invoked. Additionally the user can decide if the volumes should be unmuted or muted when the scene is invoked.

FIG. 6 shows a flowchart or process 600 of providing a player theme or a zone scene for a plurality of players, where one or more of the players are placed in a zone. The process 600 is presented in accordance with one embodiment of the present invention and may be implemented in a module to be located in the memory 282 of FIG. 2C.

The process 600 is initiated only when a user decides to proceed with a zone scene at 602. The process 600 then moves to 604 where it allows a user to decide which zone players to be associated with the scene. For example, there are ten players in a household, and the scene is named after “Morning”. The user may be given an interface to select four of the ten players to be associated with the scene. At 606, the scene is saved. The scene may be saved in any one of the members in the scene. In the example of FIG. 1, the scene is saved in one of the zone players and displayed on the controller 142. In operation, a set of data pertaining to the scene includes a plurality of parameters. In one embodiment, the parameters include, but may not be limited to, identifiers (e.g., IP address) of the associated players and a playlist. The parameters may also include volume/tone settings for the associated players in the scene. The user may go back to 602 to configure another scene if desired.

Given a saved scene, a user may activate the scene at any time or set up a timer to activate the scene at 610. The process 600 can continue when a saved scene is activated at 610. At 612, upon the activation of a saved scene, the process 600 checks the status of the players associated with the scene. The status of the players means that each of the players shall be in condition to react in a synchronized manner. In one embodiment, the interconnections of the players are checked to make sure that the players communicate among themselves and/or with a controller if there is such a controller in the scene.

It is assumed that all players associated with the scene are in good condition. At 614, commands are executed with the parameters (e.g., pertaining to a playlist and volumes). In one embodiment, data including the parameters is trans-



US 10,848,885 B2

11

ported from a member (e.g., a controller) to other members in the scene so that the players are caused to synchronize an operation configured in the scene. The operation may cause all players to play back a song in identical or different volumes or to play back a pre-stored file.

One of the features, benefits and advantages in the present invention is to allow sets of related devices (controllers and operating components) to exist as a group without interfering with other components that are potentially visible on the same wired or wireless network. Each of the sets is configured to a theme or a scene.

FIG. 7 shows an example user interface for invoking a zone scene. The user interface of FIG. 7 shows a Zone Menu that includes selectable indications of zone scenes.

FIG. 8 shows another example user interface for invoking a zone scene. FIG. 8 shows a Zone Menu that includes a softkey indicating a Scenes menu. Pressing the Scenes softkey will show the Scenes menu where all the available zone scenes are shown as selectable indications.

The present invention has been described in sufficient detail with a certain degree of particularity. It is understood to those skilled in the art that the present disclosure of embodiments has been made by way of examples only and that numerous changes in the arrangement and combination of parts may be resorted to without departing from the spirit and scope of the invention as claimed. While the embodiments discussed herein may appear to include some limitations as to the presentation of the information units, in terms of the format and arrangement, the invention has applicability well beyond such embodiment, which can be appreciated by those skilled in the art. Accordingly, the scope of the present invention is defined by the appended claims rather than the forgoing description of embodiments.

I claim:

1. A first zone player comprising:

a network interface that is configured to communicatively couple the first zone player to at least one data network; one or more processors;

a non-transitory computer-readable medium; and program instructions stored on the non-transitory computer-readable medium that, when executed by the one or more processors, cause the first zone player to perform functions comprising:

while operating in a standalone mode in which the first zone player is configured to play back media individually in a networked media playback system comprising the first zone player and at least two other zone players:

(i) receiving, from a network device over a data network, a first indication that the first zone player has been added to a first zone scene comprising a first predefined grouping of zone players including at least the first zone player and a second zone player that are to be configured for synchronous playback of media when the first zone scene is invoked; and

(ii) receiving, from the network device over the data network, a second indication that the first zone player has been added to a second zone scene comprising a second predefined grouping of zone players including at least the first zone player and a third zone player that are to be configured for synchronous playback of media when the second zone scene is invoked, wherein the second zone player is different than the third zone player;

12

after receiving the first and second indications, continuing to operate in the standalone mode until a given one of the first and second zone scenes has been selected for invocation;

after the given one of the first and second zone scenes has been selected for invocation, receiving, from the network device over the data network, an instruction to operate in accordance with a given one of the first and second zone scenes respectively comprising a given one of the first and second predefined groupings of zone players; and

based on the instruction, transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players such that the first zone player is configured to coordinate with at least one other zone player in the given one of the first and second predefined groupings of zone players over a data network in order to output media in synchrony with output of media by the at least one other zone player in the given one of the first and second predefined groupings of zone players.

2. The first zone player of claim 1, wherein the instruction to operate in accordance with the given one of the first and second zone scenes comprises an instruction to operate in accordance with the first zone scene, and

wherein transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players comprises transitioning from operating in the standalone mode to operating in accordance with the first predefined grouping of zone players such that the first zone player is configured to coordinate with at least the second zone player to play back output media in synchrony with output of media by at least the second zone player.

3. The first zone player of claim 2, wherein the instruction is a first instruction, and wherein the first zone player further comprises program instructions stored on the non-transitory computer-readable medium that, when executed by the one or more processors, cause the first zone player to perform functions comprising:

while operating in accordance with the first predefined grouping of zone players, receiving, from the network device over the data network, a second instruction to operate in accordance with the second predefined grouping of zone players; and

based on the second instruction, (a) ceasing to operate in accordance with the first predefined grouping of zone players such that the first zone player is no longer configured to coordinate with at least the second zone player to output media in synchrony with output of media by at least the second zone player and (b) beginning to operate in accordance with the second predefined grouping of zone players such that the first zone player is configured to coordinate with at least the third zone player to output media in synchrony with output of media by at least the third zone player.

4. The first zone player of claim 2, wherein the first zone scene

further comprises an indication of predetermined media to be played when the first zone scene is invoked, and wherein the first zone player further comprises program instructions stored on the non-transitory computer-readable medium that, when executed by the one or more processors, cause the first zone player to perform functions comprising:

US 10,848,885 B2

13

based on the instruction, coordinating with at least the second zone player to output the predetermined media in synchrony with output of the predetermined media with at least the second zone player.

5 5. The first zone player of claim 1, wherein the instruction to operate in accordance with the given one of the first and second zone scenes comprises an instruction to operate in accordance with the second zone scene, and wherein transition-  
10 ing from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players comprises transition-  
15 ing from operating in the standalone mode to operating in accordance with the second predefined grouping of zone players such that the first zone player is configured to coordinate with at least the third zone player to output media in synchrony with output of media by at least the third zone player.

20 6. The first zone player of claim 5, wherein the instruction is a first instruction, and wherein the first zone player further comprises program instructions stored on the non-transitory computer-readable medium that, when executed by the one or more processors, cause the first zone player to perform functions comprising:

25 while operating in accordance with the second predefined grouping of zone players, receiving, from the network device over the data network, a second instruction to operate in accordance with the first predefined grouping of zone players; and

30 based on the second instruction, (a) ceasing to operate in accordance with the second predefined grouping of zone players such that the first zone player is no longer configured to coordinate with at least the third zone player to output media in synchrony with output of media by at least the third zone player and (b) begin-  
35 ning to operate in accordance with the first predefined grouping of zone players such that the first zone player is configured to coordinate with at least the second zone player to output media in synchrony with output of  
40 media by at least the second zone player.

7. The first zone player of claim 1, wherein the first predefined grouping of zone players does not include the third zone player, and wherein the second predefined group-  
45 ing of zone players does not include the second zone player.

8. A non-transitory computer-readable medium, wherein the non-transitory computer-readable medium is provi-  
50 sioned with program instructions that, when executed by one or more processors, cause a first zone player to perform functions comprising:

while operating in a standalone mode in which the first zone player is configured to play back media individu-  
ally in a networked media playback system comprising the first zone player and at least two other zone players:

55 (i) receiving, from a network device over a data network, a first indication that the first zone player has been added to a first zone scene comprising a first predefined grouping of zone players including at least the first zone player and a second zone player that are to be configured for synchronous playback of media when  
60 the first zone scene is invoked; and

(ii) receiving, from the network device over the data network, a second indication that the first zone player has been added to a second zone scene comprising a second predefined grouping of zone players including  
65 at least the first zone player and a third zone player that are to be configured for synchronous playback of media

14

when the second zone scene is invoked, wherein the second zone player is different than the third zone player;

after receiving the first and second indications, continuing to operate in the standalone mode until a given one of the first and second zone scenes has been selected for invocation;

after the given one of the first and second zone scenes has been selected for invocation, receiving, from the net-  
work device over the data network, an instruction to  
operate in accordance with a given one of the first and  
second zone scenes respectively comprising a given  
one of the first and second predefined groupings of  
zone players; and

based on the instruction, transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined group-  
ings of zone players such that the first zone player is  
configured to coordinate with at least one other zone  
player in the given one of the first and second pre-  
defined groupings of zone players over a data network  
in order to output media in synchrony with output of  
media by the at least one other zone player in the given  
one of the first and second predefined groupings of  
zone players.

9. The non-transitory computer-readable medium of claim 8, wherein the instruction to operate in accordance with the given one of the first and second zone scenes comprises an instruction to operate in accordance with the first zone scene, and wherein transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players com-  
35 prises transitioning from operating in the standalone mode to operating in accordance with the first predefined grouping of zone players such that the first zone player is configured to coordinate with at least the second zone player to output media in synchrony with output of media by at least the  
40 second zone player.

10. The non-transitory computer-readable medium of claim 9, wherein the instruction is a first instruction, and wherein the non-transitory computer-readable medium is also provisioned with program instructions that, when executed by the one or more processors, cause the first zone player to perform functions comprising:

while operating in accordance with the first predefined grouping of zone players, receiving, from the network device over the data network, a second instruction to  
operate in accordance with the second predefined  
grouping of zone players; and

based on the second instruction, (a) ceasing to operate in accordance with the first predefined grouping of zone players such that the first zone player is no longer configured to coordinate with at least the second zone player to output media in synchrony with output of media by at least the second zone player and (b) beginning to operate in accordance with the second predefined grouping of zone players such that the first zone player is configured to coordinate with at least the third zone player to output media in synchrony with  
output of media by at least the third zone player.

11. The non-transitory computer-readable medium of claim 9, wherein the first zone scene further comprises an indication of predetermined media to be played when the first zone scene is invoked, and wherein the non-transitory computer-readable medium is also provisioned with pro-

US 10,848,885 B2

15

gram instructions that, when executed by the one or more processors, cause the first zone player to perform functions comprising:

based on the instruction, coordinating with at least the second zone player to output the predetermined media in synchrony with output of the predetermined media by at least the second zone player.

12. The non-transitory computer-readable medium of claim 8, wherein the instruction to operate in accordance with the given one of the first and second zone scenes comprises an instruction to operate in accordance with the second zone scene, and wherein transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players comprises transitioning from operating in the standalone mode to operating in accordance with the second predefined grouping of zone players such that the first zone player is configured to coordinate with at least the third zone player to output media in synchrony with output of media by at least the third zone player.

13. The non-transitory computer-readable medium of claim 12, wherein the instruction is a first instruction, and wherein the non-transitory computer-readable medium is also provisioned with program instructions that, when executed by the one or more processors, cause the first zone player to perform functions comprising:

while operating in accordance with the second predefined grouping of zone players, receiving, from the network device over the data network, a second instruction to operate in accordance with the first predefined grouping of zone players; and

based on the second instruction, (a) ceasing to operate in accordance with the second predefined grouping of zone players such that the first zone player is no longer configured to coordinate with at least the third zone player to output media in synchrony with output of media by at least the third zone player and (b) beginning to operate in accordance with the first predefined grouping of zone players such that the first zone player is configured to coordinate with at least the second zone player to output media in synchrony with output of media by at least the second zone player.

14. The non-transitory computer-readable medium of claim 8, wherein the first predefined grouping of zone players does not include the third zone player, and wherein the second predefined grouping of zone players does not include the second zone player.

15. A method executed by a first zone player, the method comprising:

while operating in a standalone mode in which the first zone player is configured to play back media individually in a networked media playback system comprising the first zone player and at least two other zone players:

(i) receiving, from a network device over a data network, a first indication that the first zone player has been added to a first zone scene comprising a first predefined grouping of zone players including at least the first zone player and a second zone player that are to be configured for synchronous playback of media when the first zone scene is invoked; and

(ii) receiving, from the network device over the data network, a second indication that the first zone player has been added to a second zone scene comprising a second predefined grouping of zone players including at least the first zone player and a third zone player that are to be configured for synchronous playback of media

16

when the second zone scene is invoked, wherein the second zone player is different than the third zone player;

after receiving the first and second indications, continuing to operate in the standalone mode until a given one of the first and second zone scenes has been selected for invocation;

after the given one of the first and second zone scenes has been selected for invocation, receiving, from the network device over the data network, an instruction to operate in accordance with a given one of the first and second zone scenes respectively comprising a given one of the first and second predefined groupings of zone players; and

based on the instruction, transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players such that the first zone player is configured to coordinate with at least one other zone player in the given one of the first and second predefined groupings of zone players over a data network in order to output media in synchrony with output of media by the at least one other zone player in the given one of the first and second predefined groupings of zone players.

16. The method of claim 15, wherein the instruction to operate in accordance with the given one of the first and second zone scenes comprises an instruction to operate in accordance with the first zone scene, and wherein transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players comprises transitioning from operating in the standalone mode to operating in accordance with the first predefined grouping of zone players such that the first zone player is configured to coordinate with at least the second zone player to output media in synchrony with output of media by at least the second zone player.

17. The method of claim 16, wherein the instruction is a first instruction, the method further comprising:

while operating in accordance with the first predefined grouping of zone players, receiving, from the network device over the data network, a second instruction to operate in accordance with the second predefined grouping of zone players; and

based on the second instruction, (a) ceasing to operate in accordance with the first predefined grouping of zone players such that the first zone player is no longer configured to coordinate with at least the second zone player to output media in synchrony with output of media by at least the second zone player and (b) beginning to operate in accordance with the second predefined grouping of zone players such that the first zone player is configured to coordinate with at least the third zone player to output media in synchrony with output of media by at least the third zone player.

18. The method of claim 16, wherein the first zone scene further comprises an indication of predetermined media to be played when the first zone scene is invoked, the method further comprising:

based on the instruction, coordinating with at least the second zone player to output the predetermined media in synchrony with output of the predetermined media by at least the second zone player.

19. The method of claim 15, wherein the instruction to operate in accordance with the given one of the first and second zone scenes comprises an instruction to operate in

US 10,848,885 B2

17

accordance with the second zone scene, and wherein transitioning from operating in the standalone mode to operating in accordance with the given one of the first and second predefined groupings of zone players comprises transitioning from operating in the standalone mode to operating in accordance with the second predefined grouping of zone players such that the first zone player is configured to coordinate with at least the third zone player to output media in synchrony with output of media by at least the third zone player.

20. The method of claim 19, wherein the instruction is a first instruction, the method further comprising:

while operating in accordance with the second predefined grouping of zone players, receiving, from the network device over the data network, a second instruction to operate in accordance with the first predefined grouping of zone players; and

based on the second instruction, (a) ceasing to operate in accordance with the second predefined grouping of zone players such that the first zone player is no longer configured to coordinate with at least the third zone player to output media in synchrony with output of media by at least the third zone player and (b) beginning to operate in accordance with the first predefined grouping of zone players such that the first zone player is configured to coordinate with at least the second zone player to output media in synchrony with output of media by at least the second zone player.

\* \* \* \* \*

18